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WATER RESOURCES OF POINTE COUPEE PARISH, LOUISIANA

WATER RESOURCES BULLETIN NO. 11

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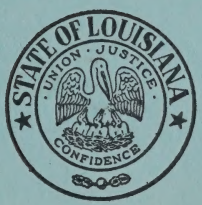

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WATER RESOURCES BULLETIN NO. 11

WATER RESOURCES OF POINTE COUPEE PARISH, LOUISIANA

by

M. D. WINNER, JR., M. J. FORBES, JR.,
and
W. L. BROUSSARD
U.S. GEOLOGICAL SURVEY

Published by
DEPARTMENT OF CONSERVATION
LOUISIANA GEOLOGICAL SURVEY
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Baton Rouge, La.
March 1968

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Baton Rouge, Louisiana

WATER RESOURCES

OF

POINTE COUPEE PARISH, LOUISIANA

By M. D. Winner, Jr., M. J. Forbes, Jr., and
W. L. Broussard

WATER RESOURCES BULLETIN No. 11 March 1968

ABSTRACT

Pointe Coupee Parish has abundant supplies of ground and surface water. Large quantities of fresh ground water occur throughout the parish in a series of southerly dipping sand and gravel beds to a maximum depth of about 2,600 feet below mean sea level in the southern part.

As many as 12 separate fresh-water-bearing aquifers may be present at a given site in the southeastern part of the parish, where some individual sands are over 250 feet thick. The potential yield of a properly constructed and developed large-diameter well screened in a typical thick sand is at least 1,000 gpm (gallons per minute). A yield from the alluvial aquifer has been recorded at 4,000 gpm.

In 1964, water levels ranged from about 5 to 28 feet below land surface in the alluvial aquifer to as much as 60 feet above land surface in deeper sands. Water-level declines of 5 feet or more per year in some sands in the

southeastern part of the parish are attributed to the effects of withdrawals in the Baton Rouge area.

The general chemical character of ground water ranges from a very hard, calcium bicarbonate type in the alluvial aquifer to a soft, sodium bicarbonate type in the deeper sands. In scattered areas of the southwestern part of the parish, salt water is in the base of the alluvial aquifer and in some of the deeper sands. There is no fresh water in the sands of zone 3, west of the area between Lottie and Maringouin, nor in the extreme northern tip of the parish near Simmesport.

About 90 percent of the water used in the parish is from ground-water sources. About 3.5 mgd (million gallons per day) of ground water were used in 1964; most of this water was supplied by the alluvial aquifer for industry (1.7 mgd) and for irrigation (0.75 mgd).

The surface-water resources of Pointe Coupee Parish include the Mississippi-Atchafalaya-Old River system, which bounds the parish on all sides except to the south, and a network of interior streams, lakes, and canals. The parish is adequately protected from floods by a levee system and the Morganza Floodway.

The Mississippi-Atchafalaya-Old River waterway system can furnish large amounts of moderately hard to very hard, calcium bicarbonate type water suitable for various industrial processes or for irrigation. Operation of the Old River control structures may result in significant salinity increases in the Atchafalaya River at low stages because of flow from the mineralized Red and Black River systems.

Raccourci Old River, an oxbow lake, has a potential reservoir capacity of nearly 30 billion gallons. The lake is replenished mainly by periodic overflow from the Mississippi River, and its water quality is similar to that of the Mississippi. Interior streams of the parish serve chiefly for drainage purposes, and their flow is largely dependent on rainfall.

False River, another oxbow lake, has a reservoir capacity of over 20 billion gallons. The lake is replenished

mostly by rainfall and by some ground-water discharge. Water in False River is of a moderately hard to hard, calcium bicarbonate type.

Natural environmental controls in False River are usually unfavorable for the growth and reproduction of coliform bacteria. However, water samples from this lake indicated that coliform bacteria populations at various times and places exceeded generally recognized limits for swimming. The sources of this bacterial pollution are overflowing septic tanks and rainfall runoff from barnyards adjacent to the lake.

Vast supplies of surface water are available in Pointe Coupee Parish for industrial and agricultural purposes. Only about 0.25-0.50 mgd, largely for stock and irrigation purposes, was used in 1964. However, this resource is much used for transportation and for recreational purposes.

INTRODUCTION

OBJECTIVES OF REPORT

The purpose of this report on the water-resources of Pointe Coupee Parish is to (1) describe the quantity, quality, and availability of water for public-supply, industrial, agricultural, and domestic use, (2) provide a detailed framework of water facts which can be used to make decisions concerning the development of water, (3) make known existing or potential water problems, and (4) suggest possible solutions to these problems.

PREVIOUS WORK

Prior to this investigation, no interpretive reports were available that described in detail the geology and water resources of the parish. General statements about the water resources have been published as parts of the Parish Planning Reports of 1946 and 1956 (Louisiana Dept. of Public Works, 1946 and 1956).

Various aspects of the water resources in Pointe Coupee Parish have been published as special reports or as part of statewide investigations. The U.S. Army Corps of Engineers published a report on the results of pumping tests in the alluvial aquifer at the Old River Control structure (U.S. Army Corps of Engineers, 1956). The geomorphology of the False River area and considerable historical detail concerning the cutoff of False River from the Mississippi River and its evolution to the present-day form is described by Sternberg (1956).

Rollo (1960) presented several statewide maps relating to the occurrence of fresh ground water in the State. Snider and Forbes (1961) provided data on the pumpage of water for all purposes in Pointe Coupee Parish. In 1962, Snider and others presented ground-water data for most public water-supply systems in the State. The water supplies at Fordoche, Innis, Morganza, and New Roads are described in the report.

A number of other basic water records pertaining to Pointe Coupee Parish have been published by several Parish, State, and Federal agencies. Reports containing these rec-

ords are listed at the end of the report under "Selected References."

ACKNOWLEDGMENTS

The authors express their appreciation to the large number of people who have aided in the progress of this investigation. Many private individuals allowed access to their property to make hydraulic measurements and electrical logs and to collect water samples. Well contractors furnished logs and other valuable well data. Public officials have cooperated in our search for pumping records and allowed access to public property. Electrical logs of oil-test wells were made available by the Louisiana Geological Survey, Department of Conservation.

Special thanks is due to Mr. Robert A. LaFleur, Executive Secretary, Louisiana Stream Control Commission, and his staff for their kind assistance and for the use of their laboratory facilities.

This report is a product of a series of water-resources studies being made in Louisiana in cooperation with the Louisiana Department of Public Works and the Louisiana Geological Survey, Department of Conservation.

DESCRIPTION OF PROJECT AREA

The 564-square mile area of Pointe Coupee Parish is in south-central Louisiana (pl. 1). Its boundaries are Concordia and West Feliciana Parishes along Lower Old River and the Mississippi River to the north and east; West Baton Rouge, Iberville, and St. Martin Parishes to the southeast and south; and St. Landry and Avoyelles Parishes along the Atchafalaya River to the west.

CLIMATE

The climate of Pointe Coupee Parish is typical of southern Louisiana. In summer, prevailing southerly winds from the Gulf of Mexico circulate moist air, which often results in afternoon thundershowers. At times, the prevailing moist condition is interrupted by periods of hotter and drier weather brought by westerly and northwesterly winds. In winter, the parish is subjected alternately to

warm, tropical air from the south and cold, continental weather fronts from the north and northwest. The mean maximum and mean minimum temperature is about 80° and 55°F, respectively; the extreme temperatures recorded are 105° and 5°F.

The wettest year of record was 1961 when about 83 inches of rain were recorded; the driest was 1954 when only about 34 inches were recorded. Normally, about 58 to 60 inches of rain fall in the parish each year.

Weather observations are made at six locations in or adjacent to the parish; Batchelor, Lettsworth, and New Roads in Pointe Coupee Parish, Angola in West Feliciana Parish, Melville in St. Landry Parish, and Simmesport in Avoyelles Parish.

TOPOGRAPHY

Pointe Coupee Parish is within the Mississippi River alluvial plain (Fenneman, 1938, p. 92). Altitudes range from about 50 feet above msl (mean sea level) in the north to about 15 feet above msl in the south; the general slope of the land is about 1 foot per mile southward. Backswamps are the most extensive landform in the parish. These low-lying, poorly drained areas, often overgrown with jungle-like vegetation, accept and hold the overflow of floodwaters from nearby streams. A special feature in backswamps is ridge and swale topography. The ridges, which rise 5 feet or more higher than their counterpart depressions or swales, bound former courses of the migrating Mississippi River. Some swales may remain as small lakes or ponds for a number of years and are refilled periodically during times of high water or by rainfall. An excellent example of ridge and swale topography is on The Island, which is within the eastern or inside loop area of False River near New Roads.

Natural levee deposits, which form the higher and better drained areas, flank present and former stream courses. The natural levees rise abruptly from the bank of the parent stream and gradually slope away, merging into the backswamp areas. Altitude differences between natural levee and backswamp areas are as much as 15 feet.

More detailed information about the Mississippi al-

luvial valley landforms and surficial deposits is given by Fisk (1944, 1947, and 1952).

DRAINAGE

Because Pointe Coupee Parish is nearly surrounded by natural and manmade levees within the parish, drainage is accomplished entirely by streams originating and flowing southward through several natural watercourses and a large number of interconnected, manmade canals and ditches. The major streams which drain the parish are Bayou Latenache (northern and western parts), Bayou Fordoche and Bayou Grosse Tete (central part), and Bayou Poydras (eastern part). These streams eventually discharge into the Atchafalaya distributary system.

A number of blind streams (streams having no outlet) and borrow pits, which serve as holding ponds to drain adjacent land or levee embankments, do not contribute to the volume of water moving out of the parish. During dry weather they are emptied by evaporation and slow downward and lateral seepage through surficial deposits.

Because the Mississippi River, Atchafalaya River, and Lower Old River are walled off from the parish by a levee system, they normally do not affect internal drainage except for small areas outside the main levee system. However, indirect effects of these rivers on the internal drainage system of the parish occur at times of high river stage when there is an increase of subsurface flow from these rivers into the drainage system, thus contributing water and slowing normal rainfall runoff. During extreme flood conditions the Morganza Floodway structure would be opened to permit diversion of a part of the flow of the Mississippi River into the floodway system along the western part of the parish.

DEVELOPMENT

Pointe Coupee is an agricultural parish with about 75 percent of its 22,500 population (1960) living outside of incorporated communities. New Roads, the parish seat, had a population in 1960 of almost 4,000; the village of Morganza, almost 950; and the village of Livonia, almost 450.

The economy of the parish is dependent largely on agricultural products such as sugarcane, beef, cotton, corn, and pecans and on oil and gas development. Other income sources are the industries processing the above agricultural products and the recreational camps and facilities around False River and Raccourci Old River.

GEOLOGY

Pointe Coupee Parish is underlain by a complex series of southerly dipping, interfingering, clay, silt, sand, and gravel deposits. Fresh-water-bearing sediments range in age from Miocene to Recent and dip at the rate of about 20 feet per mile in the northern part of the parish and about 50 feet per mile in the southern part. The dip also increases with depth to a maximum of about 75 feet per mile at the base of the fresh-water section in the southern part of the parish. Geologic sections (pl. 2) in several parts of the parish show the attitude and continuity of the fresh-water-bearing sediments.

STRATIGRAPHY

In Pointe Coupee Parish, as in other parts of southern Louisiana, the correlation, description, and naming of rock units in terms of defined periods of geologic time, particularly in the interval from Miocene to Recent, presents problems ordinarily not involved in the descriptions of older, more consolidated, and areally extensive rock units. A solution to these problems, as applied to the aquifers of Pointe Coupee Parish, is to describe the sand and gravel beds, either singly or as a group, in terms of hydraulic units or zones. On this basis, the aquifers are evaluated by classification of their hydraulic relations and correlated accordingly, regardless of whether time boundaries cross geologic or hydrologic units within the zone.

A correlation chart for the principal aquifers in Pointe Coupee Parish and for geologic and hydrologic units of neighboring areas is presented in table 1. During this study no evidence was found to support the use in Pointe Coupee Parish of the time-stratigraphic nomenclature used by Jones and others (1954) in St. Landry Parish. However, a lithologic correlation for the aquifers common to both parishes is shown on section B-B' (pl. 2[1]).

Correlation of many of the aquifers in Pointe Coupee Parish with those in the Baton Rouge area is established.[2]

---

[1]Electrical log of oil-test well Haas-Hirsch No. 1 is common to this section and to section in Jones and others, 1954, pl. 12.

[2]Electrical log of well PC-66, T. 5 S., R. 11 E., is common to section A-A', plate 2 of this report and to Morgan, 1961, plate 1 (well 13).

Table 1. Hydrologic correlation diagram for Pointe Coupee Parish and adjacent areas

System	Series	St. Landry Parish (Jones and others, 1954) Formation	St. Landry Parish Aquifer	Pointe Coupee Parish Aquifer		West Baton Rouge Parish (Morgan, 1961) Aquifer	West Feliciana Parish (Morgan, 1964) Aquifer
Quaternary	Recent	Le Moyen: Lebeau Member	Atchafalaya	Alluvial aquifer		Alluvial deposits	Undifferentiated Quaternary alluvium
Quaternary	Pleistocene	Prairie	Chicot				
Quaternary	Pleistocene	Montgomery	Chicot				
Quaternary	Pleistocene	Bentley	Chicot			"400-foot" sand	Undifferentiated Quaternary upland deposits
Quaternary	Pleistocene	Williana	Chicot	"600-foot" sand		"600-foot" sand	Undifferentiated Quaternary upland deposits
Tertiary	Pliocene	Foley: Mamou Member	Evangeline	"800-foot" and (or) "1,000-foot" sands	Zone 1	"800-foot" sand	
Tertiary	Pliocene	Foley: Mamou Member	Evangeline		Zone 1	"1,000-foot" sand	Zone 1
Tertiary	Pliocene	Foley: Steep Gully Member	Evangeline	"1,200-foot" sand	Zone 1	"1,200-foot" sand	Zone 1
Tertiary	Pliocene	Foley: Steep Gully Member	Evangeline	"1,500-foot" sand	Zone 2	"1,500-foot" sand	Zone 1
Tertiary	-?-	Foley: Steep Gully Member	Evangeline	"1,700-foot" sand	Zone 2	"1,700-foot" sand	Zone 2
Tertiary	-?-			"2,000-foot" sand	Zone 2	"2,000-foot" sand	Zone 2
Tertiary	Miocene	Fleming of Fisk (1940)	(Undifferentiated)	"2,400-foot" sand	Zone 3	"2,400-foot" sand	Zone 3
Tertiary	Miocene	Fleming of Fisk (1940)	(Undifferentiated)	"2,800-foot" sand	Zone 3	"2,800-foot" sand	Zone 3

For this reason the same aquifer names used in Baton Rouge by Meyer and Turcan (1955) are assigned to the aquifers in Pointe Coupee Parish. Where specific aquifer correlations could not be made, as in the northern part of the parish, the aquifers are grouped as hydraulic zones 1, 2, or 3. These zones generally correlate with those in West Feliciana Parish. (See Morgan, 1963.[3])

STRUCTURE

Two major fault systems, the Bancroft and the Tepetate-Baton Rouge systems crossing the southern half of Pointe Coupee Parish in an eastwest direction, are described by Murray (1961, p. 188-191). (See fig. 1.) Most of the oil and gas production of the parish is associated with these faults.

[3]Electrical logs of wells common to both project areas are: WF-222 T. 3 S., R. 3 W.) in section A-A', plate 2 of this report and well 11 in NW-SE section, plate 1, Morgan, 1963; WF-22 (T. 1 S., R. 5 W.) in section C-C', plate 2 of this report and well 5 in NW-SE section, plate 1, Morgan, 1963.

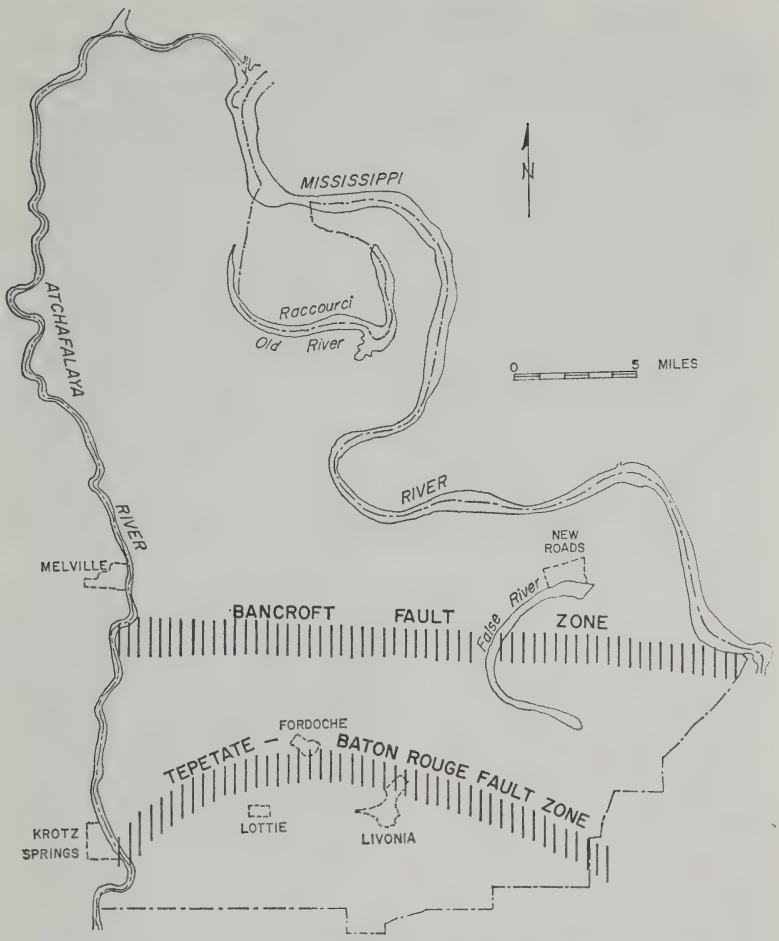

Figure 1. Major fault zones (after Murray, 1961).

Although the greatest amount of displacement along these faults is generally well below the fresh-water-bearing aquifers, Murray (1961) indicated that displacements may be as much as 350 feet at depths of about 2,000 feet in some areas along the Tepetate-Baton Rouge fault system. Therefore, some of the deeper fresh-water-bearing aquifers are affected by faulting (pl. 2). Faulted fresh-water-bearing sands might terminate abruptly against a clay or silt bed or become hydraulically connected with sand units containing water of poorer quality.

Lithologic correlations indicate that faulting has affected the fresh-water-bearing sands along both fault systems. Abrupt changes in depth to the base of fresh water in the Lottie-Livonia-Fordoche area are believed to be a result of faulting along the Tepetate-Baton Rouge system (pl. 3). These changes in depth are also reflected in section B-B' (pl. 2). Beds along this fault zone are displaced about 50 feet (pl. 2). However, the deepest fresh-water-bearing sands in this area probably are of little importance because they are relatively thin, of limited areal extent, and subject to salt-water encroachment. The maximum displacement of fresh-water-bearing sands along the Bancroft Fault zone in the False River area is about 50 feet (pl. 2, section A-A'). Westward, this amount of offset may be greater or less depending on the nature of the fault zone; and, therefore, the geologic and hydraulic continuity of some of the deeper aquifers crossing this zone may be interrupted.

WATER RESOURCES

The economy and future development of Pointe Coupee Parish will benefit from the plentiful and essentially untapped supply of water in the area. About 90 percent of the water consumed in the parish is obtained from fresh-water-bearing aquifers. The oxbow lakes of False River and Raccourci Old River and the numerous ponds, drainage canals, and streams are potential sources of usable water in addition to their present recreational and drainage uses. The Mississippi River and the Atchafalaya-Lower Old River systems are valuable assets to the parish and have almost unlimited potential as a water resource. The following sections are devoted to the occurrence and assessment of the water resources in the parish.

GROUND WATER

GENERAL OCCURRENCE AND MOVEMENT

Ground water in Pointe Coupee Parish occurs mostly under artesian conditions; that is, water levels in wells screened in the various aquifers will rise above the top of the aquifer. The occurrence of ground water under water-table conditions in Pointe Coupee Parish has not been observed except where streams penetrate the top of the aquifer. Water-table conditions may occur in the shallow, alluvial aquifer at times of low river stage whereby low stage causes ground-water levels to fall below the top of the aquifer.

Most of the fresh-water-bearing sands underlying Pointe Coupee Parish originally were laid down under marine conditions and thus contained salt water. This salt water was flushed by fresh water moving to the southwest and west across the parish from highland areas to the north and northeast, generally as shown by Morgan (1963, p. 12). The present-day extent of the flushing of salt water from the system of aquifers underlying Pointe Coupee Parish is immediately south and west of the parish where the base of fresh water rises abruptly (Rollo, 1960, pl. 3). Variable sand and clay permeabilities and head differences between aquifers influence the extent of flushing locally by controlling both the direction and rate of water movement.

The maximum depth of fresh ground water in the parish ranges from slightly less than 500 feet below msl in the northern part to over 2,600 feet in the southeastern part, where the aquifer system consists of as many as 12 separate, fresh-water-bearing sands. (See pls. 2 and 3.) The contours on plate 3 are based on various points for which the altitude of the base of fresh water is known.[4] The base of fresh water does not necessarily coincide with the top or bottom of an aquifer and should not be construed as a stratigraphic indicator. (See sections, pl. 2.) However, structural features affect the occurrence of fresh water as reflected on the base-of-fresh-water map. The Tepetate-Baton Rouge fault zone (fig. 1) causes the irregular and abrupt changes in the base of fresh water in the Lottie-Livonia-Fordoche area. (See pl. 3.)

Some areas of the parish are underlain by intermediate salt-water-bearing sands (pl. 3). In these areas, caution should be exercised to avoid inadvertent completion of a well in these sands. Electrical logging is the best insurance against this possibility.

DESCRIPTION OF THE HYDRAULIC SYSTEM

The fresh-water-aquifer system is divisible into several zones on the basis of similar hydrologic, lithologic, and water-quality characteristics. A plot of water levels measured in the parish between 1960 and 1964 (fig. 2) shows that water levels fall into three general categories: (1) a range of about 5 to 30 feet, (2) a range of about 40 to 60 feet, and (3) a range of about 45 to 100 feet above msl. Stratigraphic correlations of the aquifers in which these wells are screened identify these groups as correlating with hydraulic zones 1, 2, and 3 of Tertiary age, and the Quaternary alluvium of Morgan (1963) in West Feliciana Parish. (For some of these correlations see pl. 2.) The lowermost group in figure 2 consists mostly of water levels from wells screened in the alluvial aquifer. For convenience, multiple water-level measurements about a common point on the graph are shown by a number en-

[4]In Louisiana, fresh water is considered to have less than 250 parts per million chloride.

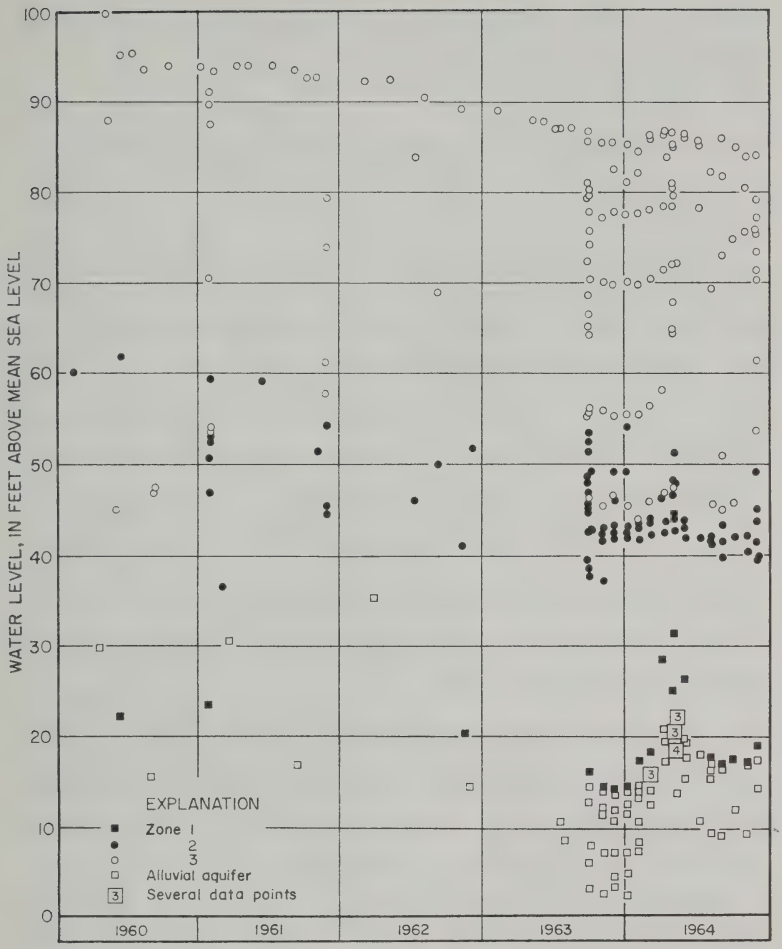

Figure 2. Ground-water levels suggest division of the aquifer system into three zones plus the alluvial aquifer.

closed in the block. A series of water levels is available from only one well screened in zone 1 and these are also plotted; however, these water levels are not distinguished easily as a category distinct from those in the alluvial aquifer. Hydrologic differences between this zone and the alluvial aquifer will be discussed later.

The effects of seasonal variations and of local and regional pumpage on water levels may be inferred from

figure 2. These variations in different areas of the parish account for the apparent grouping of water levels of one zone with those of another.

HYDROLOGIC CHARACTERISTICS OF THE FRESH-WATER-BEARING ZONES

Alluvial Aquifer

Description and extent. The coarse sands and gravels of the alluvial aquifer underlie all Pointe Coupee Parish and are the first permeable deposits encountered when drilling. This aquifer dips and thickens toward the south where it is nearly 400 feet thick (pl. 4). The base (pl. 2) of the alluvial aquifer is generally at the bottom of the first sand and gravel. The altitude of this base ranges from about 125 feet below msl in the northern part of the parish to over 400 feet below msl in the south. Hydraulic connection of the alluvial aquifer with underlying sands locally increases the effective thickness of the alluvial aquifer (pl. 2, section A-A', well PC-112[5]). Distinctions between the two beds of sand usually are not recorded by drillers because drilling characteristics are similar.

The top of the alluvial aquifer is not defined as well as the bottom because of a progressive upward grading of the sediments from coarse to fine sand to clay. For mapping purposes, the top of the alluvial aquifer is considered to be the top of the first recognizable sand interval.

The alluvial aquifer in Pointe Coupee Parish correlates with the alluvial deposits in East Baton Rouge and West Baton Rouge Parishes and with the undifferentiated Quaternary alluvium in West Feliciana Parish (Morgan, 1963). The only major difference between these correlations is that the alluvial aquifer of this report does not include the uppermost fine-grained materials included in the other definitions. Westward, the alluvial aquifer is equivalent to the

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[5]Water wells scheduled by the U.S. Geological Survey in Louisiana are assigned the appropriate parish prefix symbol and numbered consecutively as recorded. Symbols used in this report are: PC-, Pointe Coupee; Av-, Avoyelles; Ib-, Iberville; SL-, St. Landry; WBR-, West Baton Rouge; and WF-, West Feliciana. All wells mentioned are located on plate 1; data on all wells are presented in table 2, and are arranged by their township location, beginning with T. 1 S., R. 6 E. and ending with T. 7 S., R. 9 E. Chemical analyses, if available, are given in table 3.

Atchafalaya aquifer and the upper part of the Chicot aquifer of Jones and others (1954). (See table 1 and pl. 2.)

Water levels. Water levels in the alluvial aquifer fluctuate with the stage of the Mississippi River (fig. 3). Water-level records in well PC-49 (T. 3 S., R. 7 E.), in the alluvial aquifer, indicate an average annual fluctuation of about 25 feet. A part of the record from well PC-49 is plotted in figure 3 with the stages of the Mississippi River near St. Francisville and the Atchafalaya River at Melville. There are no large withdrawals from the alluvial aquifer in this area that would influence this water level. Although the response of the water level in the aquifer to changes in river stage lags by as much as a day or two, and the magnitude of the response is less, these ground-water fluctuations show hydraulic connection of the alluvial aquifer with the Mississippi River, Atchafalaya River, and other streams and lakes whose channels cut into the upper part of the aquifer.

The rate of exchange of water between the alluvial aquifer and smaller streams depends, among other factors, upon the extent to which stream channels penetrate the semipermeable clays, silts, and fine sands overlying the aquifer. The low flow in some larger interior streams, such as Bayou Fordoche and Bayou Grosse Tete, is dependent on ground-water seepage; even at times of flow river stage and after a period of no rainfall, some water stands in these streams, or at the minimum, the streambed is damp and soft. This indicates that the alluvial aquifer discharges a small but significant amount of water into these streams.

A generalized section, extending across Pointe Coupee Parish from the Atchafalaya River near Melville eastward through False River and The Island to the Mississippi River (fig. 4), shows water-level profiles in the alluvial aquifer as related to stages of various surface-water bodies in the area. The alluvial aquifer may either contribute to or accept water from streams, depending upon hydraulic gradients.

False River channel cuts into the alluvial aquifer (fig. 4); however, water-level fluctuations in False River and its response to stage change of the Mississippi are less

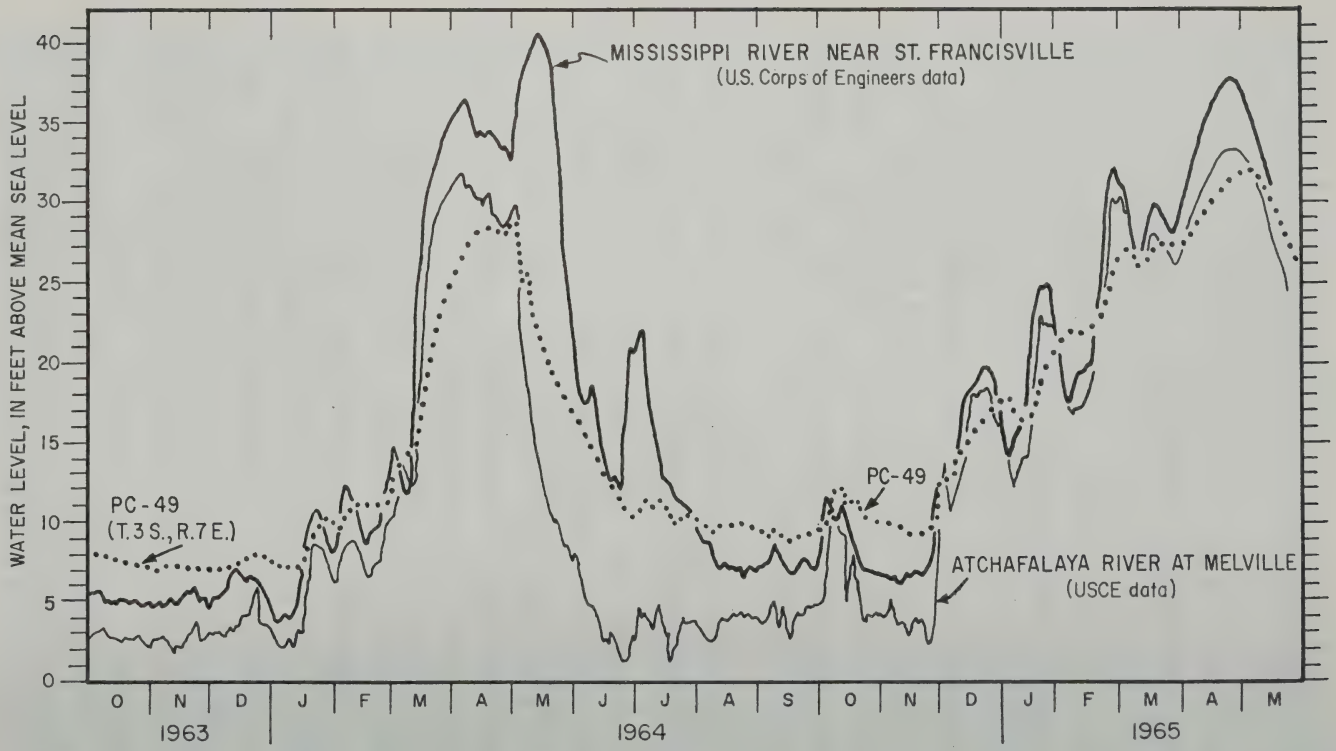

Figure 3. Water-level fluctuations in the alluvial aquifer are affected primarily by the stages of the Mississippi and Atchafalaya Rivers.

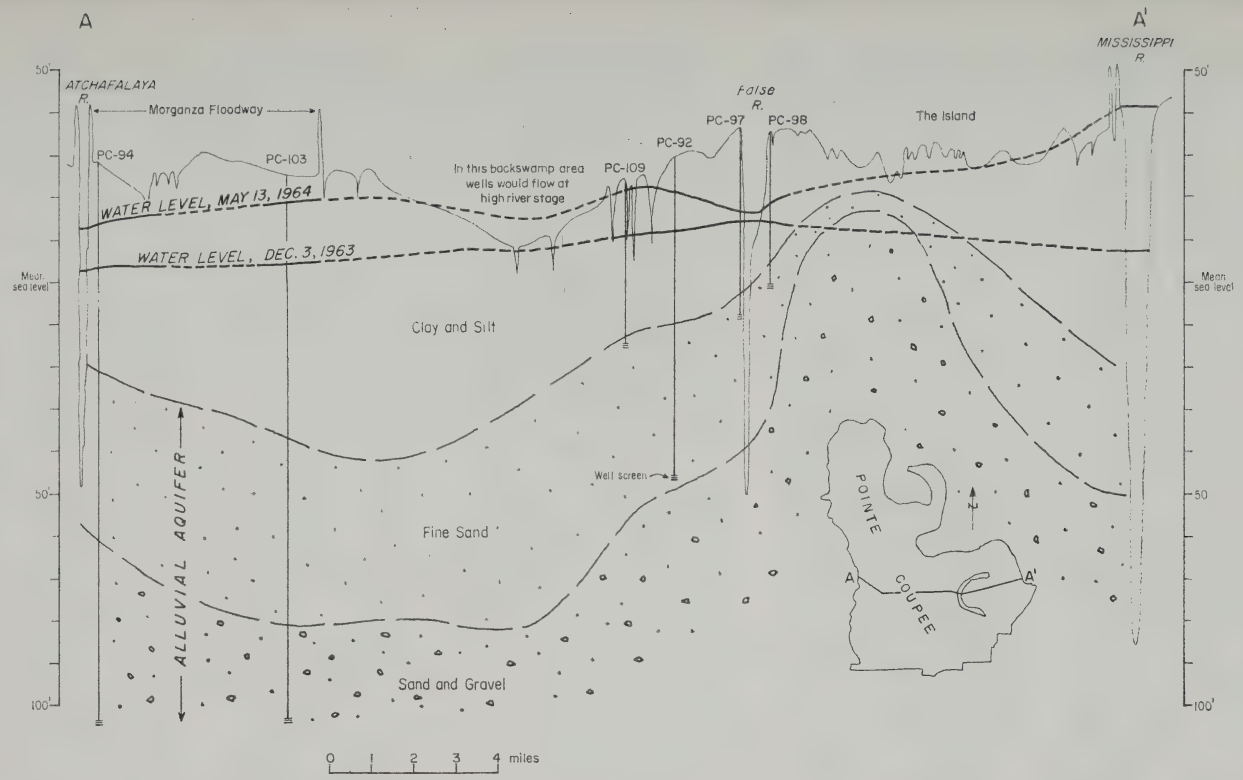

Figure 4. Water-level profiles of the alluvial aquifer show a relation with various streams at different stages.

than that of the alluvial aquifer. One reason for this is that the lakebed is covered by relatively impermeable silt and organic material which serves to inhibit response to stage changes. However, hydraulic gradients through False River indicate some water interchange between the alluvial aquifer and the lake (fig. 4). Further hydrologic discussion of False River follows in the section "Hydrology of False River."

Hydrologic characteristics. Properly constructed and developed wells screened in the alluvial aquifer in the parish are capable of producing large quantities of water. One well, near Rougon, was reported to yield 4,250 gpm (gallons per minute) with specific capacity of 42.5 gpm per ft. (gpm per foot of drawdown) ; another well nearby, PC-19, was reported to yield 3,000 gpm with specific capacity of 75 gpm per ft. These values were not corrected for friction losses in the well casing.

Transmissibility values of 170,000 to 270,000 gpd per ft (gallons per day per foot) were computed for the alluvial aquifer using the specific capacity values given above. Assuming an aquifer thickness of 200 feet, the permeability of this aquifer is estimated to be as high as 1,400 gpd per ft^2. This estimate is about the same as for the alluvial deposits in the Baton Rouge area and for the Chicot and Atchafalaya aquifers in St. Landry Parish.

Chemical quality. The alluvial aquifer yields a moderately to very hard, calcium bicarbonate type water that contains amounts of iron in excess of recommended limits (table 4). The high iron concentration gives an objectionable taste to the water and causes staining of plumbing fixtures and laundry. Water from two alluvial wells in the parish, PC-21 (T. 5 S., R. 11 E.) and PC-98 (T. 5 S., R. 10 E.), has iron contents of 1.8 and 0.88 ppm (parts per million), respectively. (See table 3.) Although higher amounts of iron have been reported, these would not be unusual.

Hardness of water is caused by the presence of calcium and magnesium salts that reduce the cleaning action of soaps and detergents. The U.S. Geological Survey has established the following classification of water hardness:

Hardness range (as ppm calcium carbonate)	Adjective rating
0- 60	Soft
61-120	Moderately hard
121-180	Hard
181+	Very hard

The hardness of water from wells PC-21 and -98, above, was 120 and 470 ppm, respectively. This is the general range of hardness which is representative of water in the alluvial aquifer in Pointe Coupee Parish.

The bottom of the alluvial aquifer contains salt water in the southwestern part of the parish. (See pls. 2 and 4.) No wells are known to be screened in this part of the aquifer, but chloride concentrations are estimated to range as high as 2,000 to 3,000 ppm on the basis of electrical-log interpretations. High concentrations of chloride are virtually untreatable and the water is unusable except possibly for cooling purposes.

Water temperatures average about 70°F, with seasonal variation of only one or two degrees. Greater fluctuations in water temperature may occur in water from wells close to the Mississippi or Atchafalaya Rivers where the alluvial aquifer is connected with these streams. (See Cardwell and Rollo, 1960, p. 29.) Wells close to these streams that are pumped at high rates (thousands of gallons per minute) may produce water that seasonally varies in temperature as much as 10 or 15 degrees (Meyer and Turcan, 1955, table 2).

Present and potential development. Pumpage from the alluvial aquifer in Pointe Coupee Parish averaged about 2.5 mgd (million gallons per day) in 1964. Practically all this water was used for processing sugarcane and for irrigation; about one percent was used by livestock, and probably less than one-half percent for rural-domestic supply.

By a conservative estimate, over 7 trillion gallons of water are stored in the alluvial aquifer underlying Pointe Coupee Parish. Assuming all this water could be recovered, and further assuming a constant withdrawal at the present rate of 2.5 mgd[6], it would take over 7,750 years to pump

[6]This rate is equivalent to slightly more than 1,700 gpm.

this amount of water. However, these figures do not include the considerable effects of available recharge to the aquifer. The net result of pumping would be to draw water from connecting rivers without dewatering the aquifer. The ground-water supply of the alluvial aquifer is underdeveloped and is essentially inexhaustible.

The calcium bicarbonate type of water in the aquifer suits the present agricultural developments of irrigation and sugarcane processing. However, because of its high hardness and iron content, this water is less suitable for domestic or drinking supplies than that from deeper aquifers. (See table 4.)

The largest potential use of water from the alluvial aquifer is for industrial processes that require large amounts of water for cooling. Wells yielding 5,000 gpm, or more, of water with a temperature of about 70°F are possible in this aquifer. Brackish water in the base of the alluvial aquifer in the southern and western parts of the parish could also be used in most cooling processes.

Table 4. Recommended limits of certain chemicals in drinking water used on interstate carriers

U.S. Public Health Service, 1962

Constituent	ppm
Iron (Fe)	0.3
Manganese (Mn)	.05
Magnesium (Mg)	125
Sulfate (SO_4)	250
Chloride (Cl)	250
Fluoride (F)	[a]1.4
Nitrate (NO_3)	45
Dissolved solids	500
Color limit of water is 15 units	

[a]For Pointe Coupee Parish only at an annual average maximum daily air temperature of 80°F.

Aquifers of Zone 1

Description and extent. The aquifers of hydraulic zone 1 correlate eastward with the "600-foot," "800-foot," "1,000-foot," and the "1,200-foot" sands of the Baton Rouge area, and westward with the lower part of the Chicot aquifer and upper part of the Evangeline aquifer. (See table 1 and pl. 2.)

The sands of zone 1 underlie the southern two-thirds of the parish and have a southerly slope that ranges from about 15 to 50 feet per mile. In the northern part of the parish these sands have been replaced wholly or in part by the younger alluvial deposits of the Mississippi River. The overlying alluvial aquifer and the uppermost sands of zone 1 are probably hydraulically connected as far south as the latitude of the southern part of False River (pl. 2); the deepest unit of this zone, the "1,200-foot" sand, probably is connected with the alluvium north of Morganza. (See pl. 5.)

The "1,200-foot" sand is the most important aquifer of zone 1 in the parish for two reasons. First, it is a thick continuous sand throughout the southern two-thirds of the parish, and second, it is the only sand of zone 1 in the parish that does not contain brackish or salt water. (See pls. 2 and 5.)

The other units of zone 1 that overlie the "1,200-foot" sand contain salt water in the same area as does the alluvial aquifer (pl. 4). The fresh-water-bearing parts of these other sand units are up to 150 feet thick, and are hydraulically more separated from the alluvial aquifer in the southeastern part of the parish, south of False River (pl. 2).

Water levels. Water levels in sands of zone 1 range from a few feet above to about 25 feet below land surface (fig. 2). Where sand units are in close proximity to the alluvial aquifer, water levels fluctuate at a periodicity and magnitude similar to that in the alluvial aquifer. Artesian pressures in the deeper sand units are sufficient to produce water levels as much as several feet above land surface, depending on the altitude of the land surface. However, detailed water-level information for these sands is not available.

Hydrologic characteristics. The sand units of zone 1 have not been developed as extensively as those in zones 2 and 3 because the artesian pressure is insufficient to supply water to a system without pumping equipment. As a result, relatively few wells are available in the parish. The maximum yield of wells screened in sands of zone 1 is about

50 gpm. However, properly constructed and developed wells in the major units of zone 1 may be expected to yield 1,000 to 2,000 gpm. Specific capacities of as much as 50 gpm per ft of drawdown, permeabilities of 300 to 800 gpd per ft^2, and transmissibilities of 20,000 to 120,000 gpd per ft can be expected for these aquifers in Pointe Coupee Parish. These estimates are based upon hydraulic characteristics of correlative sands in East Baton Rouge, East Feliciana, and West Feliciana Parishes (Morgan, 1961 and 1963).

Chemical quality. Water in the sands of zone 1 is of a moderately hard to hard, calcium bicarbonate type in areas where the sand is in close hydraulic connection with the overlying alluvial aquifer. As water moves downdip, it is modified through the process of ion exchange to a soft, sodium bicarbonate type. An indication of this softening process is the lower hardness in water from the "1,200-foot" sand (52 ppm in well PC-120, T. 6 S., R. 10 E.), about 10 miles south of the area of contact with the alluvial aquifer. Farther southward, the hardness of this water is reduced to about 2 to 5 ppm.

Objectionable constituents in water from some of the sands of zone 1 are excessive amounts of chloride, hardness, and iron. Only one sample of water has been collected from the "600-foot" sand in zone 1. This was from a well near Fordoche (PC-56) where the sand contains salt water having a chloride content of almost 1,700 ppm. The very high hardness and excess iron content of the water is due to the salt-water contamination and interchange of water with the alluvial aquifer. The "1,200-foot" sand probably contains fresh water throughout the parish. (See table 3 for detailed chemical analyses of water from sands of zone 1.)

Present and potential development. Water from the sands of zone 1 is used primarily by homes and small businesses. Of the estimated 10,000 to 20,000 gpd (gallons per day) pumped from zone 1, approximately 90 percent is withdrawn from the "1,200-foot" sand.

Long-term water-level declines in zone 1 (fig. 5) are about ½ to 1¾ feet per year. The decline is mostly due to the regional effects of pumping in the Baton Rouge area where about 18.5 mgd are being withdrawn from the

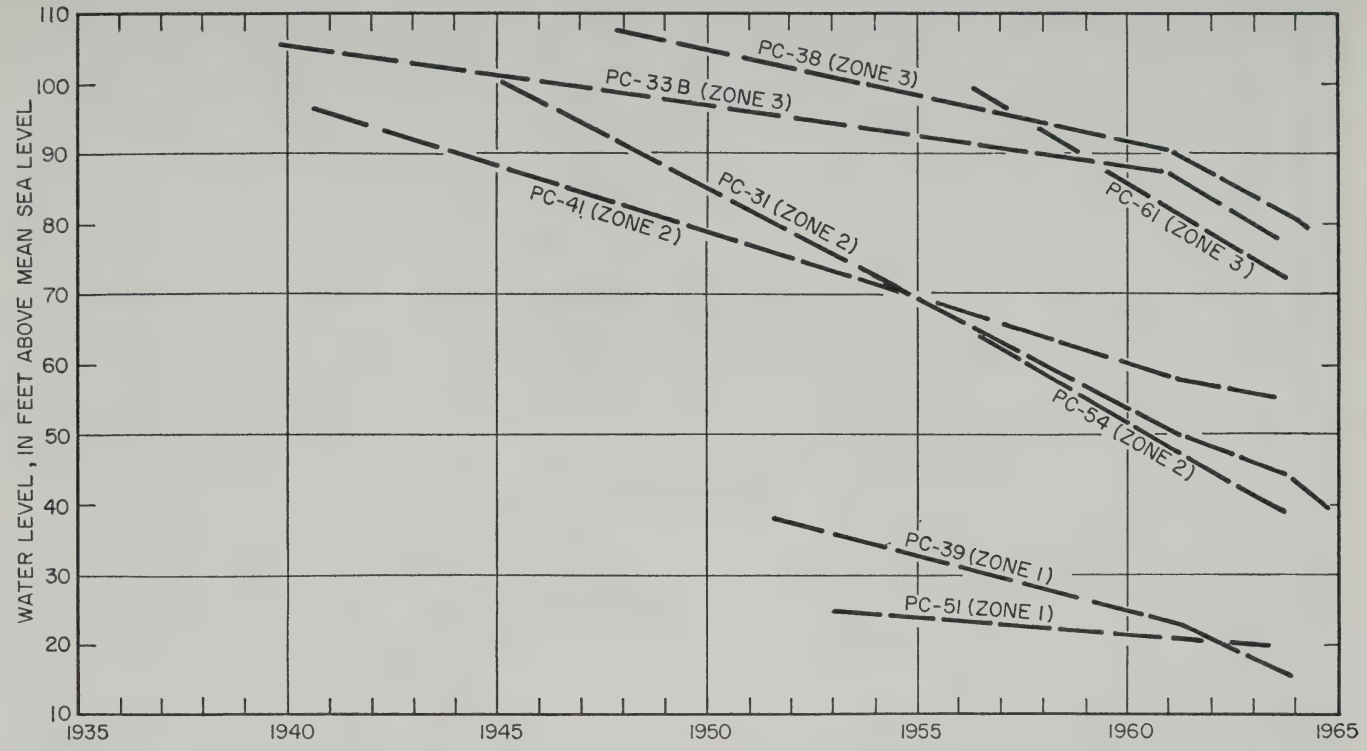

Figure 5. Long-term water-level records show decline in artesian pressure in zones 1, 2, and 3.

"1,200-foot" sand. Detailed water-level records are not available and the effects of local pumping on water levels in the parish have not been measured. However, the effects are negligible because of the small quantity of water pumped from scattered wells.

The "1,200-foot" sand offers the greatest potential for development. This sand underlies the southern half of the parish and is capable of supplying 1,000 to 2,000 gpm of soft, sodium bicarbonate type water to individual wells.

In the southwestern part of the parish, water in the shallower sands of zone 1 has a high chloride content; consequently, it is not suitable for most purposes. However, elsewhere in the parish the water has a high hardness and iron content which can be treated and made suitable for low-cost, domestic well systems. Additional information is needed to delineate the extent of salt water in these sands.

Aquifers of Zone 2

Description and extent. The aquifers of zone 2 are approximately midway in the fresh-water-bearing section; the base of this zone ranges about 500 to 2,000 feet below msl from north to south in the parish. This series of aquifers extends throughout the parish and is composed of fine to coarse, gray, marine-deposited sands with occasional lenses of gravel.

In the southern half of the parish, sands of zone 2 correlate with the "1,500-foot," "1,700-foot," and "2,000-foot" sands of the Baton Rouge area. (See table 1 and pl. 2.) Maps (pls. 6, 7, and 8) showing the distribution, depth, and thickness of sands in Pointe Coupee Parish are useful guides when planning construction of wells in these sands. These maps also show areas where each sand contains salt water as well as areas where the particular sand is thin or absent.

The "1,500-foot" sand is not as extensive as the other major aquifers of zone 2 and is thin or missing in large areas of the parish. (See pl. 6.) The thickness of the "1,500-foot" sand averages 50 to 100 feet, except in a channellike area south of False River where it is more than 200 feet

thick. In the southwestern part of the parish the sand averages less than 50 feet in thickness and contains salt water.

The "1,700-foot" sand is similar in distribution and thickness to the "1,500-foot" sand, except that it is more extensive areally and is usually thicker. This aquifer is thickest, over 200 feet in places, in a channellike area in the vicinity of New Roads. Salt water occurs in this sand in the southwestern part of the parish. (See pl. 7.)

Of the aquifers in zone 2, the "2,000-foot" sand is the most extensive (pl. 8). Only in a few small areas is this aquifer thin or missing. This sand is divided into two units in some parts of the parish and the thickness contours on plate 8 represent the total thickness of the sand of the two units. The thickness of the "2,000-foot" sand averages 100 feet in the southern part of the parish and about 50 feet or less in the northern part. Parts of a channellike area in this aquifer extend southward from the False River area and westward to the Livonia and Maringouin areas and are over 200 feet thick; another thick part of the "2,000-foot" sand is about 6 miles north of Melville.

The "2,000-foot" sand contains salt water in the extreme southwestern part of the parish and in the bottom of the lower unit of this aquifer in the area west of Maringouin. Salt water also occurs in lenses of sand, which appear to be partially disconnected from the main body of the "2,000-foot" sand in the Lottie-Livonia area. These lenses may be the result of faulting; however, they have some degree of hydraulic connection with the fresh-water part of the "2,000-foot" sand.

Water levels. The largest number of zone 2 water-level measurements available are for wells screened in the "2,000-foot" sand. The water-level contour map in figure 6 shows the approximate altitude of the water surface in this sand in October 1963. As shown by the contours, the regional slope of the water surface is from north to south and southwest, indicating water movement from the recharge areas in southwestern Mississippi.

The water-level contours also show the effects of local and regional pumping and, possibly, some anomalous ef-

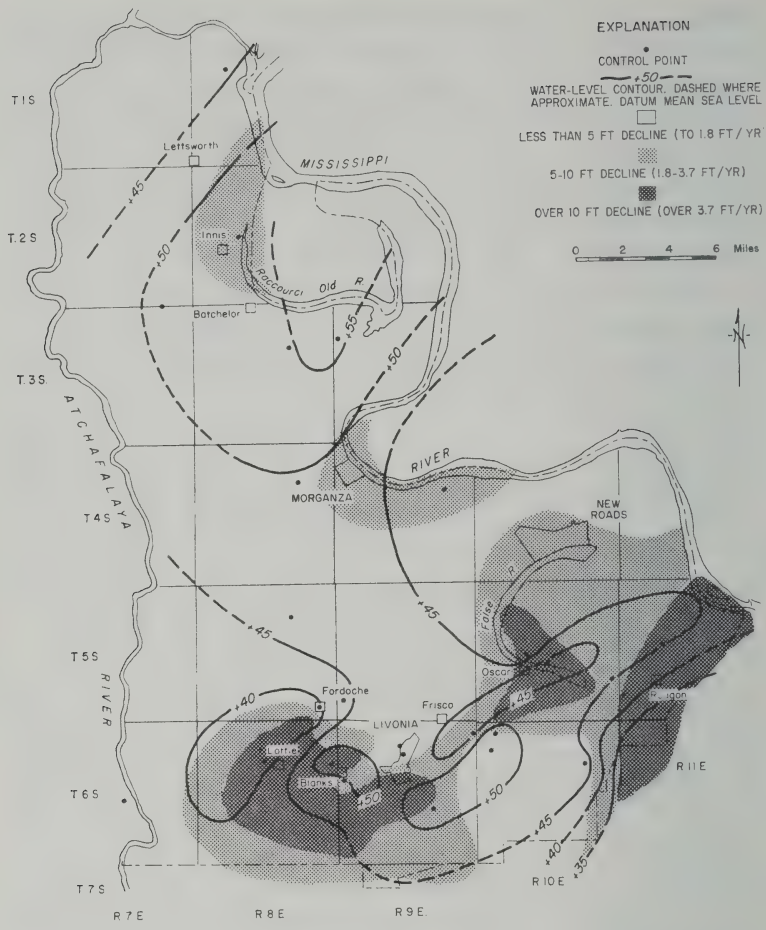

Figure 6. Altitude of the water level in the "2,000-foot" sand (zone 2), October 1963, and the approximate decline in head since February 1961.

fects of the Tepetate-Baton Rouge fault zone in the southern part of the parish. Local pumping is probably responsible for the closed contours west of the Lottie-Fordoche area and southern False River area, while the closely spaced contours in the extreme southeastern part are believed to represent the effects of pumping in the Baton Rouge industrial area.

Rates of water-level decline in zone 2 aquifers range from about 0.5 to over 5.5 feet per year. The effect of some

withdrawals for public supply from the "2,000-foot" sand plus the drawdown from pumping outside the parish have resulted in 10-foot (or greater) declines in local areas during the period February 1961 to October 1963 (fig. 6). The effect of scattered domestic well pumpage throughout the parish is negligible and contributes little to the general water-level decline—probably less than 0.5 feet per year. Monthly water levels in the "2,000-foot" sand are shown in figure 7.

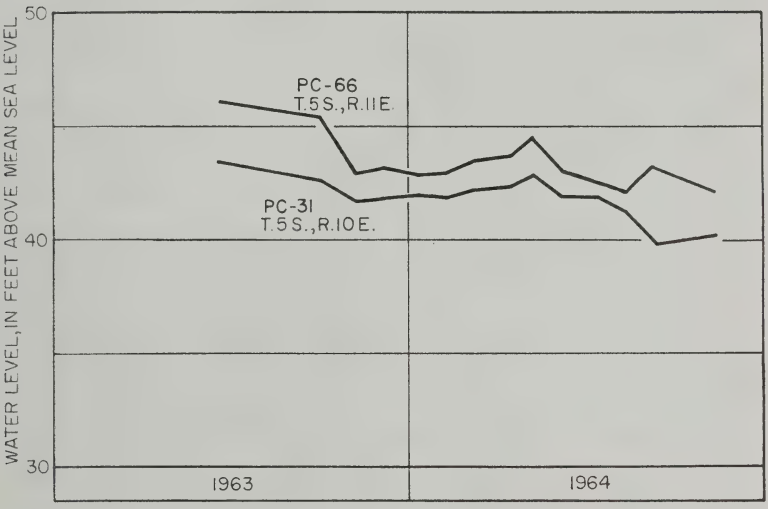

Figure 7. Water-level fluctuations in the "2,000-foot" sand (zone 2) in the vicinity of False River.

The water-level decline map for the "2,000-foot" sand (fig. 6) was interpolated from a generalized water-level contour map for February 1961 and from the map for October 1963 (fig. 6). The map depicts areas where several ranges of water-level decline occurred. Data were insufficient to map the decline rates of water levels in the "1,500-foot" and "1,700-foot" sands. On the basis of a few scattered measurements, the effects of local withdrawals plus withdrawals from the latter sands could be as much as 5 feet per year in the vicinity of a pumped well. (See also fig. 5 for long-term artesian decline in selected wells screened in zone 2 aquifers.)

Generally, water levels are higher above land surface

in the southern half of the parish than in the northern half because the land-surface slope is slightly greater than the water-level slope in a north-south direction. For example, in the Raccourci Old River area where water-level altitudes are about 55 feet (fig. 6) and land altitudes average about 45 feet, it is unlikely that water levels in wells screened in the "2,000-foot" sand will rise much more than 10 feet above land surface. However, in the Livonia area where the average land surface is about 20 feet above msl, the maximum altitude of water levels in wells is about 50 feet.

Water-level measurements were made in the fall of 1963 in three wells, PC-52 (T. 6 S., R. 11 E.), PC-55 (T. 5 S., R. 8 E.), and PC-84 (T. 6 S., R. 8 E.), screened in the "1,700 foot" sand. Although the wells are in a different sand than the "2,000-foot" sand, the water levels agreed closely with measurements in nearby wells in the "2,000-foot" sand. The water-level differences between the "1,700-foot" and "2,000-foot" sands probably are less than 5 feet because of regional hydraulic connection between the two sands. However, pumping interference between wells screened in one or the other sand at the same location will likely be small.

Although no water-level measurements for the "1,500-foot" sand are available, reported water levels indicate that water levels in this sand are 5 to 10 feet lower than in the "2,000-foot" sand. (See also fig. 2 for the range of zone 2 water levels.)

Hydrologic characteristics. The analysis of a recovery test in a well (PC-54) at Fordoche gave a coefficient of transmissibility of about 18,000 gpd per ft and a coefficient of permeability of 300 gpd per ft^2. These values probably represent the minimum coefficients for the thinner parts of the aquifer. Although no other pumping tests are available, it is believed that transmissibilities may range from 50,000 to 100,000 gpd per ft and permeabilities from 500 to 1,000 gpd per ft^2 in the thicker (100 feet or more) sand units of zone 2.

Yields of 18 flowing wells screened in sands of zone 2 range from less than 5 gpm to 350 gpm and average about 75 gpm. The maximum pumping yield recorded is 226 gpm

from an industrial well (PC-53, T. 5 S., R. 9 E.); however, most pump units in the parish are of the centrifugal booster type which commonly pump only 10 to 30 gpm. A properly constructed and developed large-diameter well (over 6 inches) with adequate pumping equipment should be capable of producing 1,000 gpm or more from any one of the thicker sand units.

The few available specific-capacity measurements for wells in sands of zone 2 are low (1.5-6 gpm per ft), and probably are not indicative of the true potential specific capacities for these sands. The low results are likely due to a combination of poor well development, partial penetration of the aquifer by the well, friction loss in small-diameter casings, and inaccuracies of reported water-level and discharge measurements. Specific capacities of wells screened in this zone should be similar to the 16 to 47 gpm per ft range reported by Morgan (1963) for the same zone in neighboring East Feliciana and West Feliciana Parishes.

Chemical quality. The fresh water in the aquifers of zone 2 throughout central and southern Pointe Coupee Parish is predominantly of the soft (average about 5 ppm hardness), sodium bicarbonate type. However, hydrochemical facies changes occur in these sands in the area north of Innis where the soft to moderately hard, iron-bearing, calcium bicarbonate type water is present. Water in the aquifers of zone 2 in the northern part of the parish is naturally softened by ion exchange as the water moves southward.

The highest concentration of iron was 1.4 ppm in water from well PC-107 in the area north of Lettsworth; the greatest hardness (85 ppm) was also in water from this well. Southward from this well site, the amounts of iron and hardness in the water decrease; the iron concentrations are well below the accepted limit of 0.3 ppm (table 4), and hardness is generally less than 10 ppm. The chloride content in the fresh-water parts of zone 2 aquifers generally is less than 10 ppm; the highest chloride concentration was 40 ppm from well PC-5 (T. 2 S., R. 7 E.). Chlorides exceeding 250 ppm and as much as several thousand parts per million, based on electrical-log interpretations, may be

expected in the downdip parts of these aquifers in southern and southwestern Pointe Coupee Parish. (See pls. 6, 7, and 8.) The dissolved-solids content of water in zone 2 sand ranges from about 175 to 450 ppm, and the average of 21 samples was 265 ppm. The pH of 21 samples ranged from 6.9 to 9.0.

Present and potential development. The 1964 estimated use of water from sands of zone 2 in Pointe Coupee Parish is about 75,000 to 100,000 gpd. About 60 percent of this withdrawal was from small-diameter domestic wells scattered throughout the parish. About 30 percent was from small public-supply systems concentrated mainly in the more populated areas around Fordoche and in the southern part of the False River area. The remaining pumpage was for various commercial, light industrial, farm, and stock use.

Pumping outside Pointe Coupee Parish probably has the greatest overall effect on water levels in zone 2 in the southeastern part of the parish. For example, the close spacing of water-level contours and the high rate of water-level decline in the "2,000-foot" sand in this area (fig. 6) show that the drawdown effects of pumping 25 mgd from this sand in the Baton Rouge area (Morgan and Winner, 1964) are reaching Pointe Coupee Parish. Well owners in this part of the parish are finding it necessary to install pumps in their well systems to offset the effects of falling water levels.

If the present (1964) rate of water-level decline in southeastern Pointe Coupee Parish continues or increases, water levels will decline to 20 or more feet below land surface in the next 8 to 10 years. Where water levels are 20 or more feet below land surface, centrifugal or other pumps that are affected by atmospheric pressure in lifting water become inefficient and ineffective. Thus, those planning construction of wells in this section of the parish should consider the eventuality of installing pumping equipment capable of lifts greater than 20 feet.

Large-scale development of ground water in the three major aquifers of zone 2 will be more difficult in the southwestern, western, and northern parts of the parish where

these sands are thinning and pinching out (pl. 2). The coefficient of transmissibility decreases in thinner sand beds, therefore, potential well yields would be less than those possible in the southeastern part of the parish. Also, for any given yield, pumping levels would be greater and specific capacities less. However, to meet large water requirements in these areas, the required yield could be effectively obtained by distribution of pumpage among the number of sands at any site. This may be accomplished most efficiently in a well field by screening each well in a different sand. The advantage gained is that drawdown interference between wells, if any, would be small when compared to that which would occur if all the wells were screened in the same sand.

In the southeastern part of the parish, where sand thicknesses average 100 feet or more, the potential for development of large ground-water supplies in individual sands in zone 2 is more favorable. In this area as many as five separate sands occur in zone 2, and each ranges in thickness from about 75 to 100 feet. (See pl. 2, section B-B'.) A properly constructed and developed large-diameter well screened in any one of these sands probably would yield several thousand gallons per minute.

High-chloride water in zone 2 aquifers is limited to the area of the Tepetate-Baton Rouge fault system and areas south of the fault (fig. 1). This fault system is believed to be a barrier to northward movement of salt water toward areas of pumping; however, more data along and near the fault zone are necessary to identify the extent of salt-water encroachment.

Aquifers of Zone 3

Description and extent. The aquifers of zone 3 are the deepest fresh-water-bearing units in the parish. They consist of fine to coarse gray sands and correlate with the "2,400-foot" and "2,800-foot" sands of the Baton Rouge area. These sands underlie the entire parish. They are separated from the overlying zone 2 aquifers by a continuous clay section that is nearly 300 feet thick in some places (pl. 2).

As shown by contours on plate 9, the depth to the top of the first major sand unit in zone 3 (the "2,400-foot" sand) ranges from about 500 feet below msl in the northern part of the parish to about 2,400 feet in the southern part. Locally in the south part of the parish, the "2,400-foot" sand lenses into thin alternating stringers of sand and clay or into a silty clay unit causing difficulties in mapping the top of zone 3. (See pl. 9.)

In Pointe Coupee Parish the separation of the "2,400-foot" and "2,800-foot" sands is not as distinct as in the Baton Rouge industrial area, and some hydraulic connection between these sands exists. The hydrology of zone 3 is further complicated because the "2,800-foot" sand is divided in two and, in some places, three distinct units (pl. 2). Therefore, the contours represent the total thickness of fresh-water-bearing sand in all aquifers of zone 3. For example, the area east of False River has the greatest cumulative thickness of fresh-water-bearing sand in this zone, over 400 and nearly 500 feet in some places. By contrast, in the Lottie area and southwestward, there is about the same total amount of sand in the zone; however, none of it contains fresh water, as shown by the zero contour for thickness of fresh-water-bearing sand.

Water levels. Water-level contours (fig. 8) show the approximate altitude of the water surface in the "2,800-foot" sand in May 1964. These contours indicate that ground water in this sand generally is moving westward. However, in the New Roads area, local withdrawals from the "2,800-foot" sand are causing a local cone of depression to be formed, and water moves from all direction toward the center of pumping. The ridge of high water levels east of Livonia probably is caused by the Tepetate-Baton Rouge fault zone (fig. 1).

The highest reported water level in the "2,800-foot" sand was about 115 feet above land surface in well PC-9 at New Roads in 1919. The highest water level measured by the USGS was 99.9 feet above msl in May 1960 in two wells, PC-70 at Livonia and PC-65 at New Roads. This is about 74 and 66 feet above land surface, respectively. (See table 2.) Water levels in deeper, untapped units of the

"2,800-foot" sand between Livonia and the southern False River area may be slightly higher than those levels shown in figure 8.

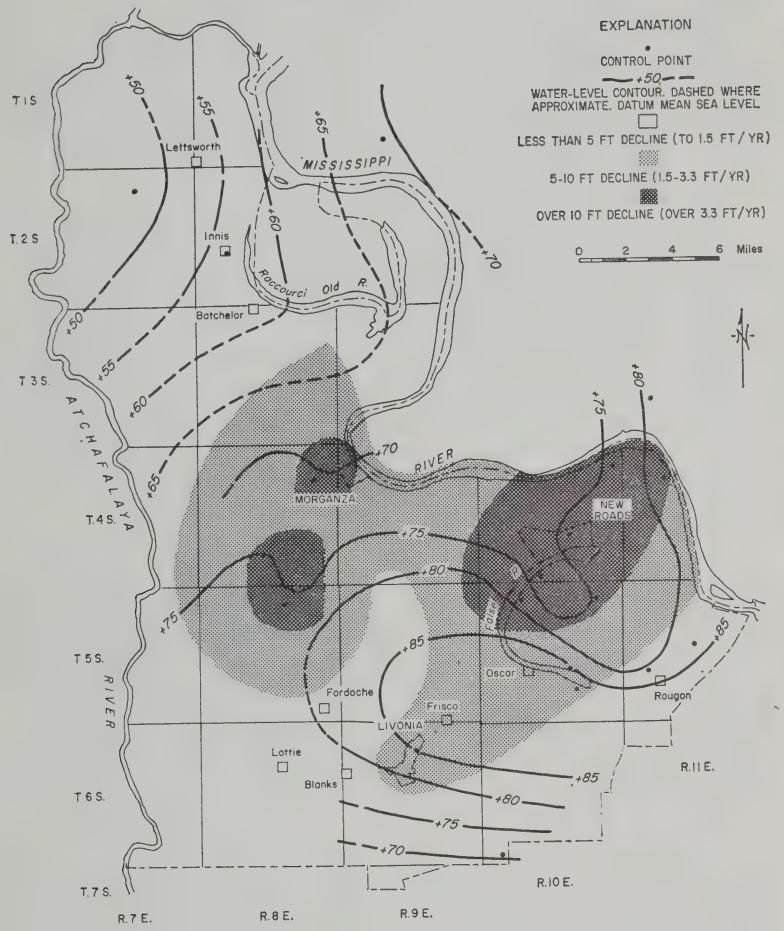

Figure 8. Altitude of the water level in the "2,800-foot" sand (zone 3), May 1964, and the approximate decline in head since February 1961.

The pattern of water-level decline in the "2,800-foot" sand in Pointe Coupee Parish shown on figure 8 suggests that most of the decline is a result of concentrated local pumping rather than regional withdrawals. In the New Roads area, where a relatively large number of wells dis-

charge from this sand, water levels have declined over 10 feet during the period February 1961 to May 1964, a rate of over 3.3 feet per year (fig. 8). In the Livonia area the static level in well PC-70 has dropped slightly over 8 feet (fig. 9) during this period. A similar rate of decline has developed around Morganza and southward. Regional withdrawals from the "2,800-foot" sand (mainly from the Baton Rouge area) are causing water levels in this sand to decline at an estimated maximum rate of 1.5 feet per year in southern Pointe Coupee Parish.

Only a few water-level measurements are available for wells screened in the "2,400-foot" sand. However, water levels in this aquifer generally are slightly lower than those in the "2,800-foot" sand. (See fig. 9.) Because pumpage from the "2,400-foot" sand in the Baton Rouge area is only slightly more than for the "2,800-foot" sand and assuming that the coefficients of transmissibility of these aquifers are similar, the decline in the "2,400-foot" sand in Pointe Coupee Parish caused by regional pumping is estimated to be about 1.5 feet per year.

Hydrologic characteristics. Wells screened in sands of zone 3 flow throughout the parish. Yields range from 15 gpm from a 2-inch well to 980 gpm from a 12-inch well. Pumping equipment usually is not needed for these wells except to boost line pressure or to increase yield in some parts of the northern half of the parish. The highest discharge measured from a pumped well is 2,075 gpm from a public-supply well (PC-65) at New Roads.

Two uncorrected specific-capacity measurements, 11.5 gpm per ft and 25.6 gpm per ft were made in wells screened in zone 3 aquifers. A recovery test made using well PC-110 (T. 5 S., R. 10 E.) indicates a coefficient of transmissibility of 180,000 gpd per ft and a coefficient of permeability of 1,700 gpd per ft^2.

Chemical quality. Chemical analyses show that water in this zone is of a soft, sodium bicarbonate type similar to that in zone 2, except for a higher average dissolved-solids content. The higher dissolved-solids content of the water mainly results from an increase in the sodium bicarbonate

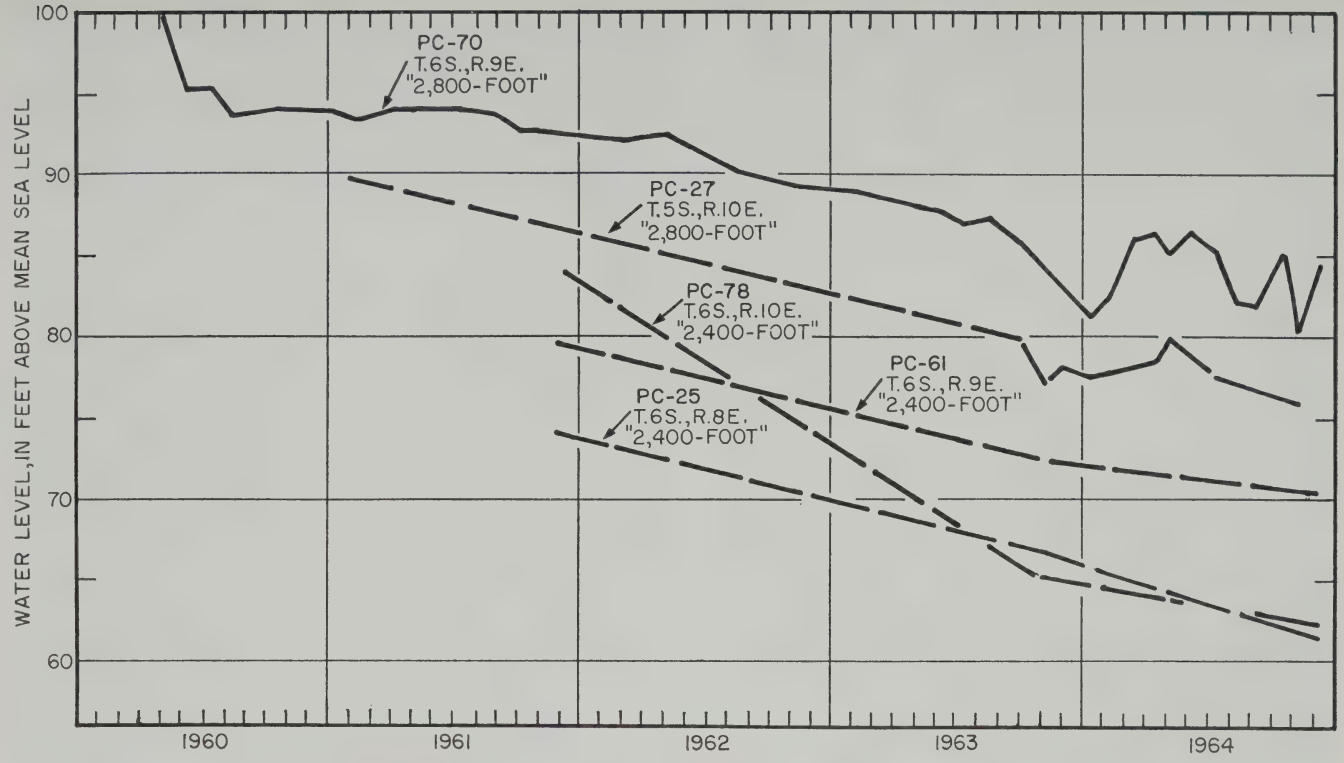

Figure 9. Water-level fluctuations in the "2,400-foot" and "2,800-foot" sands (zone 3).

as the water moves slowly downdip. The range of dissolved solids is from 222 ppm (well PC-65 at New Roads) to 1,260 ppm (well PC-25 at Lottie). (See tables 3 and 4.)

An increase in the chloride concentration in water from well PC-70 at Livonia (74 to 91 ppm) over a 4-year period indicates the slow movement of salt water toward the well. As shown on section B-B', plate 2, the well is screened near a salt water-fresh water interface, and possibly is in a zone of mixing or diffusion where the chloride content of the water is higher than normal (10 ppm). This slow increase in chloride is probably due to pumping from well PC-70 rather than from the effects of regional pumping. Movement of salt water toward the well may be laterally from the interface area, or possibly vertically from the bottom of the aquifer where, based on electrical-log data (pl. 2), chloride in the water is estimated to range from 200 to 300 ppm. An increase or decrease in the rate of discharge from this well would directly affect the rate at which the chloride concentration is increasing.

Because salt water is denser than fresh water, chloride concentrations increase with depth within an aquifer. If, for example, well PC-70 had been screened 50 or 60 feet higher, near the top of the aquifer, the original chloride content of water from the well probably would have been much lower and the increase in chloride concentrations would have required a longer period of time. The vertical gradation in the density of salt water in aquifer units is shown on a larger scale by chloride increases with depth at the Angola State Prison Farm. The chlorides in water samples that were collected from four different depths in the test hole for well WF-22 at the prison, showed a marked increase with depth and ranged from 8 to 3,650 ppm (table 3 and pl. 2). Water from a well at Innis (PC-62) tested at a depth of 1,450 feet, reportedly had a chloride concentration of 4,900 ppm. Consequently, the well was completed at a depth of 1,031 feet where it yielded water having only about 6 ppm of chloride. Brines in the water-bearing strata below the zone 3 aquifers are estimated to contain 50,000 ppm or more of chloride with dissolved solids exceeding 100,000 ppm.

Water from zone 3 aquifers south of the latitude of New Roads contains fluoride and color in excess of the recommended limits. The recommended upper concentration limit of fluoride in water is determined by the 5-year annual average maximum daily air temperature, which is about 80° F at New Roads. Thus, recommended control limits for fluoride are 0.6 and 0.8 ppm. Fluoride concentrations in excess of 1.4 ppm may be detrimental to dental health. Fluoride concentrations in water from 11 wells screened in zone 3 sands exceed the upper control limit; the highest concentration was 2.8 ppm from well PC-25 at Lottie. The average fluoride concentration in these 11 analyses was about 1.3 ppm.

At the present time there are no economical methods to remove excess fluoride from the quantities of water needed to maintain a public supply. A practical method for utilizing water containing excess fluoride would be to adjust the water to the optimum fluoride content by diluting it with water containing little or no fluoride.

Color in excess of 15 color units occurred in 27 of 40 samples of water taken from wells screened in zone 3 sands. All of the highly colored water was from wells south of the latitude of New Roads. The highest reported color, 240 units, in water from well PC-25 at Lottie, was described as having a heavy, dark straw appearance. The average of the samples having color in excess of 15 units was about 60 color units, which is best described as being noticeably pale straw or yellow.

The source of the color in the ground water of this area probably is buried and decomposed vegetation from which organic compounds are leached by the ground water. Highly colored water is not known to be harmful for drinking, but it is esthetically objectionable. Also, certain industrial processes cannot use water of high color. Methods such as cholorination, charcoal filtration, and coagulation with alum and filtration, or combinations thereof, may be successful in reducing organic color to acceptable levels. Color limits of water permissible for industrial use are outlined in California State Water Quality Control Board, 1963 and are summarized on the following table.

Color limits of water for some industrial processes

Use	Color units
Food products	10
Ice making	5
Bottled beverages	5- 10
Paper	
High grade	5
Special (tissue, filter, etc.)	5
Bleached kraft	25
Unbleached kraft	100
Baking	10
Textiles	
Cotton	50
Rayon	5
General	5- 70
Boiler feed water	2- 80, according to pressure
Brewing	0- 10
Food equipment washing	5- 20
Food processing	5- 10
Tanning	10-100

Certain dissolved gases occur in ground water, particularly in water from zone 3 sands, which impart objectionable odors and tastes to the water. Hydrogen sulfide is formed by reduction of sulfate ions and is the most common and widespread dissolved gas in ground water. It causes water to have a rotten egg odor. The amount of gas in ground water varies from place to place; however, water with a pH of 8 or more is likely to have at least 0.1 ppm. Aeration and chlorination are effective methods for removing the small amounts of hydrogen sulfide from water.

The small amount (0.2 ppm or less, Hodges and others, 1963) of combustible methane gas that may be dissolved in water in zone 3 aquifers is usually odorless, tasteless, and harmless. However, other hydrocarbon gases associated with methane may impart an objectionable taste and smell to the water, as well as create a potential fire hazard (Harder and Holden, 1965). Water from well PC-133 near Livonia has a very bad taste and smell and may contain dissolved gases, other than hydrogen sulfide, although no analysis of the gas has been made. The taste and odor disappear if the water is aerated or allowed to stand.

Present and potential development. Pumpage from zone 3 sands in Pointe Coupee Parish was estimated to average about 1 million gallons a day in 1964. Of this quantity, approximately 45 percent was for the public-supply sys-

tems of Innis, Morganza, and New Roads and for other smaller water systems, mainly in the central and southeastern parts of the parish. The remaining 55 percent was for domestic supplies and for some farm and commercial uses.

The sands of zone 3 are the principal source of water for public supplies and rural-domestic users in the parish, and are second only to the alluvial aquifer in total amount of water withdrawn. Obviously, the main reason for the popularity of these deep sands as a source of fresh water (especially in the southern part of the parish) is the relatively high artesian pressure obtainable. Water systems are more convenient and less expensive to maintain if pumping equipment is not needed. However, at present rates of water-level decline (about 3 feet per year in some areas), pumping equipment may soon be needed in some wells.

As more wells are completed in zone 3 sands and put into production, greater local and regional water-level declines can be expected in this zone. Consequently, individuals or industries that propose multiwell development from this zone should consider using more than one sand so as to minimize water-level declines in any one sand.

Individual well yields of several thousand gallons per minute are possible from the sands of zone 3; however, some quality-of-water problems, such as salt-water encroachment and excessive amounts of fluoride and color, may limit development in some areas of the parish. As shown on plate 9, no fresh water is available in zone 3 in the extreme northern part of the parish, near Simmesport, or in the southwestern part of the parish. The brackish water in these areas may have commercial value in the future, such as for use in cooling or in a desalinization process. The other water-quality problems, excess color and fluoride, occur in the southern part of the parish and limit water development only from the standpoint of the economics of treatment.

SURFACE WATER

INTRODUCTION

Pointe Coupee Parish lies between two of the major rivers of North America, the Atchafalaya and the Mississippi. At the northern boundary of the parish, the rivers

are about 6 miles apart and are connected by a channel known as Lower Old River (pl. 1). Thus, Pointe Coupee Parish is embraced by the greatest drainage system on the North American Continent and the third largest in the world. These rivers have directly and indirectly influenced the development of the parish.

In past years the parish was flooded because the levees constructed by local interest groups were inadequate. The flood of 1927 is considered to be the most destructive in the history of the lower Mississippi Valley. It overstressed levees which previously had not been tested by a flood of this magnitude (U.S. Army Corps of Engineers, 1940). The action taken to prevent another such disaster has made its mark on Pointe Coupee Parish. Parts of the Flood Control Act of May 15, 1928, provided for the establishment of a floodway, limited by side levees, extending from the mouth of the Red River through the Atchafalaya basin to the Gulf of Mexico. In 1936 the law was amended to provide for the Morganza and West Atchafalaya Floodways which were to be located on the east and west sides, respectively, of the Atchafalaya River (U.S. Army Corps of Engineers, 1964a).

As a result of the work done under the Flood Control Act, levee systems, bridges, and control structures were built to guide, contain, cross, and control the massive streams under all conditions. The Mississippi River is leveed along the eastern side of the parish with the exception of the Morganza Floodway entrance and an area around Raccourci Old River. Along the western side of the parish, a levee parallels the Atchafalaya River; Lower Old River is leveed for its length on the southern side, and guide levees for the Morganza Floodway split the parish (pl. 1). The Morganza Floodway is closed near its northern end by a control structure containing gates which may be lowered or raised. (See Louisiana Department of Public Works, 1956.) The floodway is crossed by several roads and railroads on bridges built at altitudes above the maximum expected flood stage.

Although the Atchafalaya and Mississippi Rivers represent the largest source of surface water to the parish, False River and Raccourci Old River are of interest to both

parishioners and outsiders. Both bodies of water are oxbow lakes that were formerly loop sections of the Mississippi River. The False River cutoff was reported to have been completed by 1722 (Sternberg, 1956) and the Raccourci cutoff was reported to have been accomplished by 1848 (U.S. Army Corps of Engineers, 1964b). Both cutoffs were assisted by man. False River is now isolated from the Mississippi River by channel fill and by a levee. Rainfall runoff from the immediate area replenishes the lake, and outflow takes place through a canal near Oscar where a variable sill structure is located. Raccourci Old River is replenished by overflow of the Mississippi River and by local rainfall runoff. A channel connects the eastern end of the lake and the Mississippi River, and a structure to maintain and control lake stage has been constructed in this channel. Both False River and Raccourci Old River have become centers of recreation.

With the exception of the southern boundary, the parish is enclosed by the levee systems mentioned previously. No streams enter the parish; surplus water within the parish flows southward through a network of streams and canals. The larger and more important streams are: Bayou Latenache, Bayou Fordoche, Bayou Grosse Tete, Bayou Poydras, and Bayou Sere. Most streams in Point Coupee Parish are intermittent and flow only when there is runoff from rainfall; however, ground-water discharge sustains a low-flow stage in the deeper streams whose channels have cut below the prevailing ground-water levels in the alluvial aquifer. The principal stream network is shown in plate 1.

THE MISSISSIPPI AND ATCHAFALAYA RIVERS

A 6-mile-long channel known as Lower Old River served as the flow path between the Mississippi River and the head of the Atchafalaya River and forms the northernmost boundary of the parish. Through the years an increasing percentage of Mississippi River water flowed through this channel, with a future possibility of greatly decreased flow downstream on the Mississippi River and of actual diversion of the Mississippi by the Atchafalaya River. In 1910 about 17 percent of the total flow of the Mississippi River was naturally diverted to the Atchafalaya River. By

1950 the percentage had increased to about 30, and an estimation of the diversion for 1960 was about 40 percent (Latimer and Schweizer, 1951). Fisk (1952) postulated that by 1980 the final stage of diversion would be accomplished.

Construction of the Old River control complex was authorized to insure the continuance of necessary flow in the Mississippi River below the diversion point. The complex consists of Old River Lock, near the eastern end of Lower Old River; Old River diversion channel, about 3 miles north of Lower Old River; and the Old River diversion control structures, consisting of a low-sill and overbank structure.

The maximum recorded discharge for the Mississippi River occurred during the flood of 1927 when the flow was over 1,700,000 cfs (cubic feet per second) at a stage of over 60 feet above msl in Pointe Coupee Parish. (See fig. 10.) The recorded low was about 75,000 cfs at a stage of about 4 feet in 1939. The yearly mean flow averages about 600,000 cfs for the period 1927-65.

The maximum discharge for the Atchafalaya River was approximately 660,000 cfs, which occurred in 1945 at Simmesport (fig. 11). However, the highest stage (about 59 feet) was recorded during the 1927 flood. A comparison of the minimum stage records of the Mississippi and the Atchafalaya Rivers (figs. 10 and 11) shows a close correlation until 1963, when the minimum yearly stage level on the Atchafalaya River dropped significantly because of operation of the control structure.

Prior to the beginning of operation of the Old River Control structure in 1963, the minimum stage and discharge recorded for the Atchafalaya River at Simmesport were 2.23 feet (msl) and 11,600 cfs, respectively, in 1891 (U.S. Army Corps of Engineers, 1955). In July 1964, a stage of 1.05 feet and a discharge of 10,500 cfs were recorded, establishing new minima for the Atchafalaya River (U.S. Army Corps of Engineers, unpublished data). These 1964 low stages and discharges were achieved through operation of the control structure and do not necessarily represent the lowest natural stage and discharge attainable.

The effect of control structure operation on the Mis-

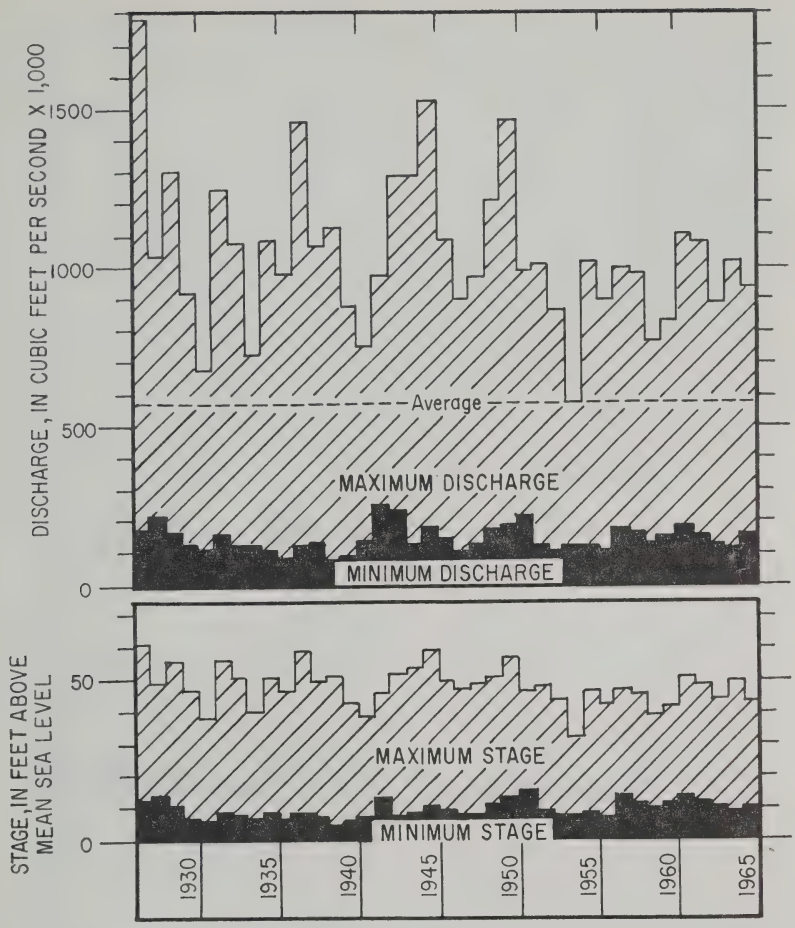

Figure 10. Annual maximum-minimum discharges and stages of the Mississippi River at Red River Landing, 1927-62, and at Tarbert Landing, 1963-65, about 6 miles upstream.

sissippi River has not been noticeable, although denial of water to the Atchafalaya River should increase the stage and discharge of the Mississippi downstream. These increases should be more noticeable during low-flow periods.

Quality of Water From the Mississippi River

The chemical quality of the water in the Mississippi River flowing by Pointe Coupee Parish is controlled by the chemical character of the water in the many tributaries

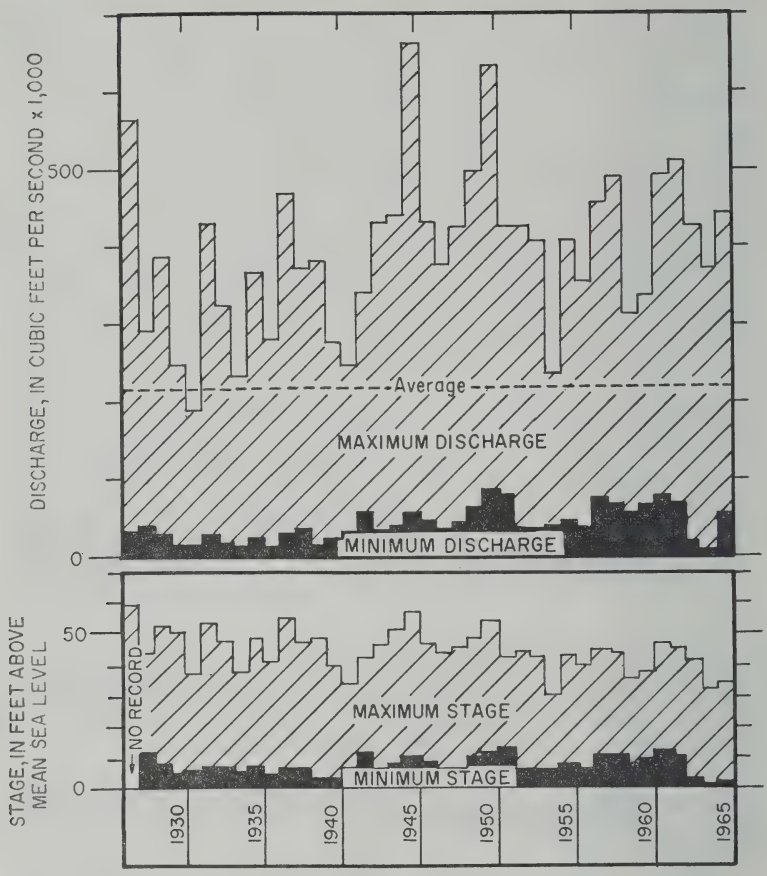

Figure 11. Annual maximum-minimum discharges and stages of the Atchafalaya River at Simmesport.

entering the river above Pointe Coupee Parish. The day-by-day variation of discharge of the Mississippi River is gradual, consequently, the chemical quality is not subject to rapid change. Daily water samples collected near St. Francisville since October 1954 show the daily fluctuations of dissolved solids to be very small (10 ppm). This is an advantage to the user since water treatment processes can be stablized and operated to compensate for the gradual quality changes.

During the period 1955 to 1964, continuous water-quality records for the Mississippi River at St. Francisville

indicate that chloride concentrations in the water ranged from 6 to 70 ppm. Chloride concentrations ranged from 11 to 40 ppm 94 percent of the time; 5 percent of the time concentrations were greater than 40 ppm, and 1 percent of the time less than 11 ppm. The range of sulfate concentrations during the same 10-year period was 16 to 85 ppm; 91 percent of the time concentrations were in the interval 26 to 70 ppm, 7 percent of the time greater than 70 ppm, and 2 percent of the time were less than 26 ppm. Maximum values of chloride and sulfate, as well as other constituents, occur during periods of low flow.

The following table lists the maximum, minimum, and

Concentrations of selected chemical constituents in Mississippi River water

Constituent	Concentrations, in ppm		
	Maximum	Minimum	Average
Bicarbonate	176	64	121
Calcium	61	22	39
Chloride	70	6	24
Fluoride	1.0	.0	.3
Iron	.24	.00	.04
Magnesium	23	3.9	9.9
Nitrate	6.8	.2	2.8
Potassium	4.1	1.2	2.8
Sodium	50	7.8	21
Silica	17	3.1	9.3
Sulfate	85	16	50

average concentrations of selected chemical constituents occurring in water from the Mississippi River during the period 1955-64. The maximum concentrations of all these constituents were below limits set for drinking water standards (table 4).

Dissolved solids. The specific conductance of a water sample, expressed in micromhos at 25°C, is a measure of the ability of the water to conduct electricity because of the character and amount of dissolved minerals in the water. The specific conductance of stream water is used to show the variation in the amount of dissolved minerals in the water.

During a 10-year period (Oct. 1954 through Sept. 1964) the specific conductance of water from the Mississippi River near St. Francisville ranged from about 160 to 650 micromhos. This corresponds to a dissolved-solids range of about 110 to 400 ppm. Duration curves indicating the inverse relations between water discharge and dissolved solids are shown in figure 12. Statistical checks indicate that the 10-year dissolved-solids curve can be used with confidence over the same period (1943-62) as the discharge curve. Dissolved solids in water from the Mississippi River exceeded 350 ppm less than 1 percent of this time. The suggested upper limit of dissolved solids of 500 ppm was not exceeded.

Hardness. Figure 13 shows that for water from the Mississippi River a specific conductance of 480 micromhos corresponds to a hardness of 180 ppm and to a dissolved-solids content of 300 ppm. Dissolved-solids concentrations of 300 ppm or more are exceeded about 5 percent of the time (fig. 12); thus, hardness concentrations of 180 ppm or more are also exceeded about 5 percent of the time. This event occurs when the discharge is less than about 120,000 cfs. Hardness concentrations exceed 120 ppm about 72 percent of the time, and are greater than 60 ppm almost 100 percent of the time.

pH. The treatment of water for pH is required to control corrosion and scale formation. Water having a pH up to about 8.2 may be corrosive to some metals, depending upon the amount of dissolved carbon dioxide and the salinity of the water. Water having a pH above 8.2 is considered noncorrosive. Alkaline water (above pH of 7) may be scale forming in pipes or boilers if calcium and magnesium are present as permanent hardness in the water. Water from the Mississippi River varies in pH from 6.7 to 8.2, indicating that it is both corrosive and scale forming in varying degrees.

Sodium-Adsorption Ratio. Sodium-adsorption ratio (SAR) is used to classify water for irrigation purposes. It expresses the relative capacity of sodium ions in water to exchange with calcium ions in the soil. A water classification for SAR is as follows (Todd, 1963, p. 192).

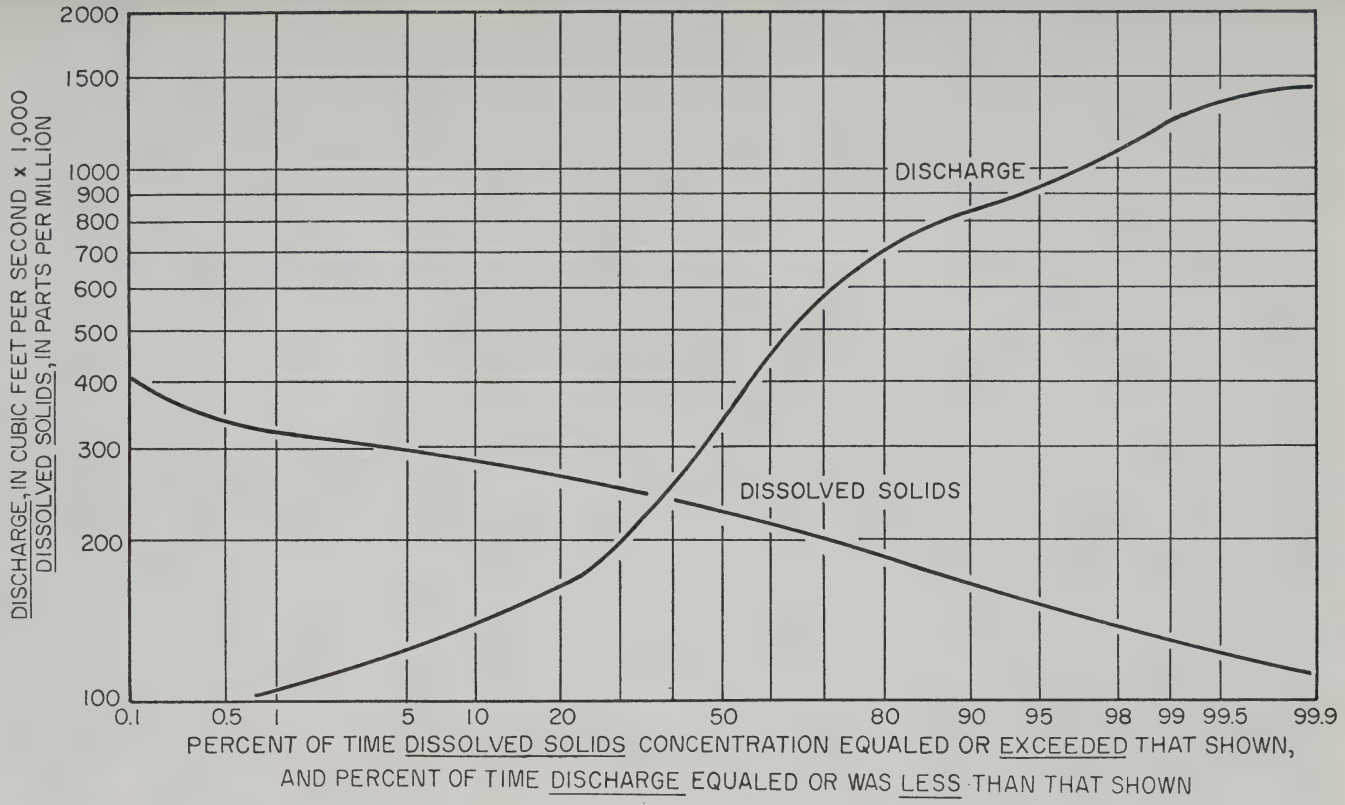

Figure 12. Average duration curves of dissolved solids and discharge for the Mississippi River near St. Francisville, 1943-62.

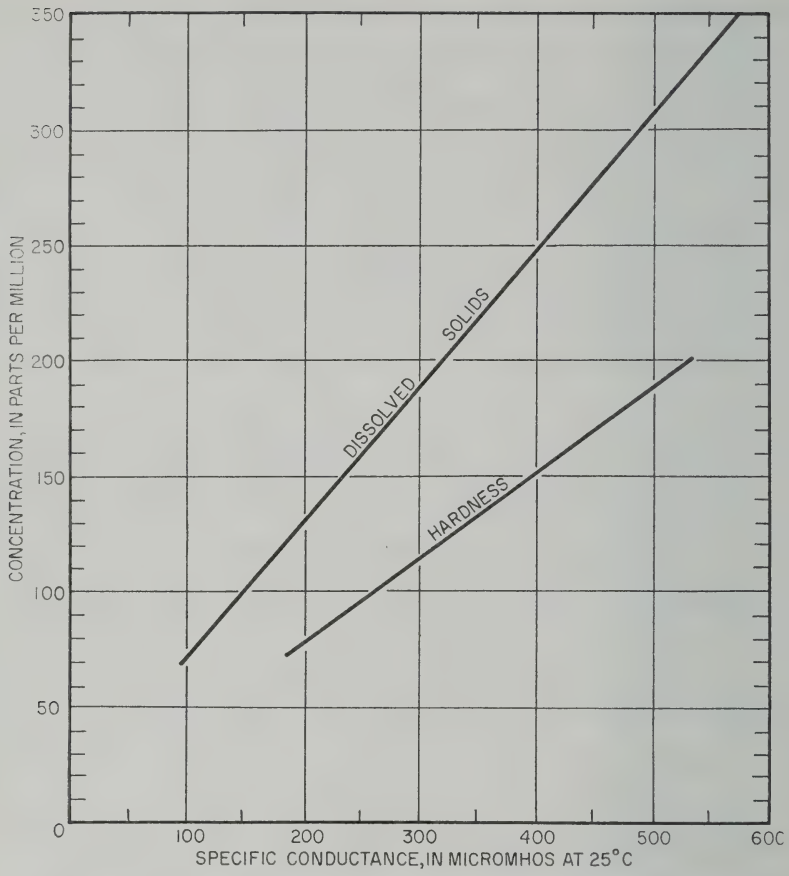

Figure 13. The relation of specific conductance to dissolved solids and hardness in the Mississippi River near St. Francisville, 1954-64.

SAR	Water class
Less than 10	Excellent
10-18	Good
18-26	Fair
Greater than 26	Poor

From 1955 to 1964 the SAR range for water from the Mississippi River near St. Francisville was 0.3 to 1.8.

Sediment. Sediment in streams consists of particulate matter, either as suspended sediment or sediment carried along the bottom as bed load. Discussions in this report refer to suspended sediment.

Monthly average sediment concentrations may be compared with average monthly discharges of the Mississippi River at Red River Landing in figure 14. The graph generally shows that an increase in discharge results in a rise in suspended sediment concentration. It is also notable that during any one year, the minimum discharge and sediment concentration occurs during the fall, then builds up to a maximum in the late winter and early spring and ends with a general decline to a minimum at the beginning of the next fall. An interesting point is that sediment concentration peaks usually occur before a discharge peak.

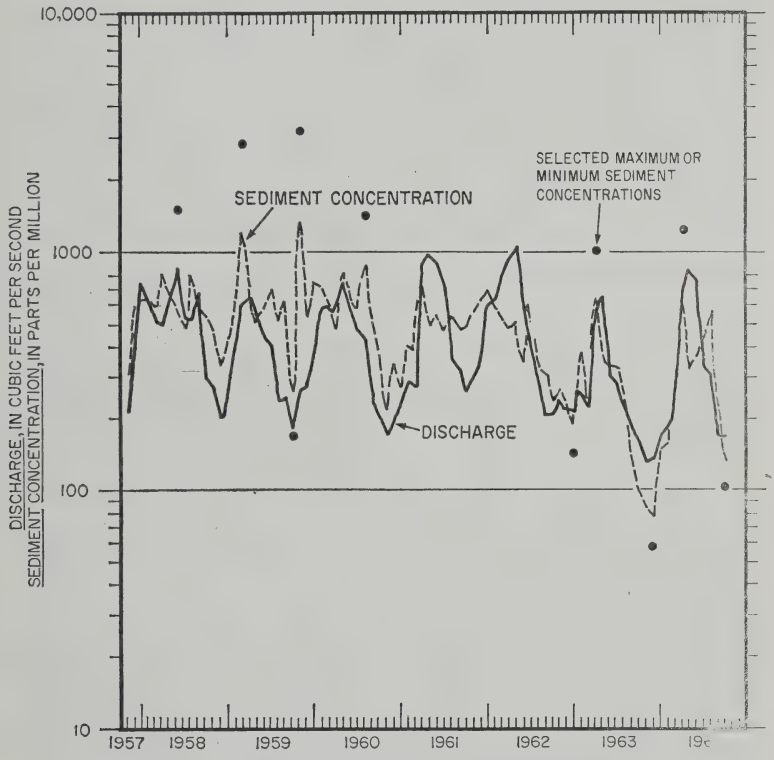

Figure 14. Comparison of average monthly sediment concentrations with average monthly discharge in the Mississippi River at Red River Landing.

For the convenience of analysis, the following three classifications of size have been established by the Federal Interagency Committee on Water Resources (U.S. Agricultural Research Service, 1965).

Diameter of particle	Classification
Above 0.0625 mm (millimeters)	Sand
0.0625-0.004 mm	Silt
Below 0.004 mm	Clay

During the period 1958-62, the U.S. Army Corps of Engineers collected and analyzed for particle size 114 water samples from the Mississippi River at Red River Landing. The times of collection of these samples were uniformly distributed within the range of stream discharge. The particle-size distribution in a sample is reported as a given percentage of the total amount of suspended sediment which is smaller than a given diameter. As an example, 70 percent of the suspended sediment was finer than 0.16 millimeter. The summary below is representative of the data obtained from the 114 sediment samples. The particle size and percent composition by size is important to most users of large quantities of stream water. Sediment is an abrasive to machinery; it forms sludge and scale in boilers, and it can produce undesirable effects in many chemical reactions and production processes.

Percent of sediment finer than a given particle size	100	90	80	70	60	50	40
Maximum particle size (mm)	0.60	0.26	0.19	0.16	0.14	0.12	0.11

Temperature. Water temperature and its changes are important factors in determining the use of water for efficient industrial cooling, heat exchange, or other processes. A graph showing monthly variation of water temperature of the Mississippi River near St. Francisville is shown in figure 15. These variations of extremes and averages were computed from daily 7 a.m. water temperature measurements. The monthly temperature fluctuations of the Mississippi River are as great as 24°F, or as little as 2°F; extremes of temperature recorded during the period of record were 34°F (Jan. 1961) and 88°F (Oct.-Nov. 1955).

Color. During the period 1955-64, the color of water from the Mississippi River near St. Francisville ranged from 0 to 70 units, and approximately 90 percent of the time the range was 10 to 30 units. Color in the water gen-

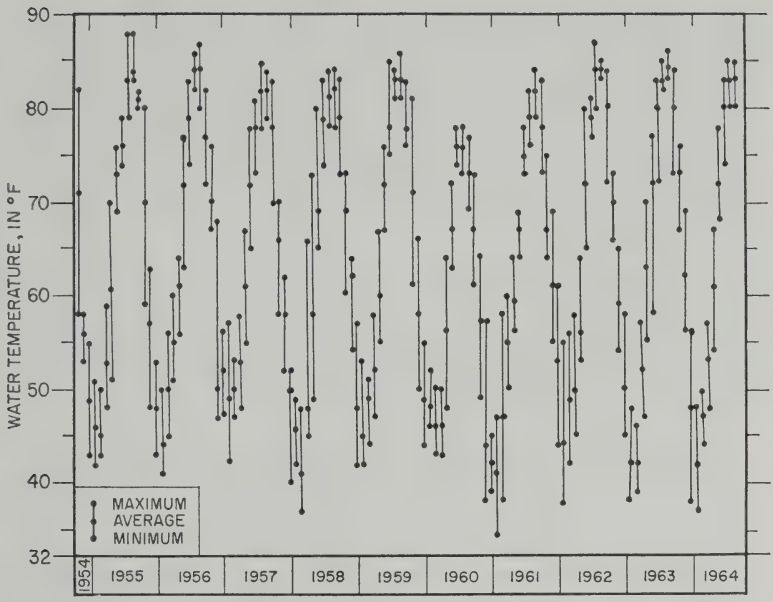

Figure 15. Monthly variation in water temperature in the Mississippi River near St. Francisville.

erally varies with stream stage and discharge; however, most of the time it is within acceptable limits for industrial processes. Color in water is usually removed during coagulation, filtration, and chlorination processes that make surface waters suitable for drinking.

Quality of Water from the Atchafalaya River

The chemical quality of water from the Atchafalaya River depends upon the dissolved solids in the water and the discharge of major tributaries—the Mississippi River (through Lower Old River and Old River outflow channel), the Red River, and the Black River, which flows into the Red River about 20 miles north of Simmesport. Daily samples were collected from the Atchafalaya River at Krotz Springs from 1953 to 1955, and analyzed for selected chemical constituents. Chloride concentrations ranged from 11 to 170 ppm, with 91 percent having concentrations in the interval of 11 to 90 ppm; about 9 percent were greater than 90 ppm. Oilfield brine discharged into the Black River sys-

tem in the northern part of the State (Kapustka, 1964, p. 30) may contribute to irregular chloride increases in the Atchafalaya River. This pollution, in combination with low-flow stages of the streams involved, may produce higher maximum chloride concentrations in the Atchafalaya River. However, a "cease and desist order" has been issued by the State to control the discharge of brine, which should alleviate this problem.

Sulfate concentrations, which are associated with inflow from the Red River system, ranged from 11 to 100 ppm, with the majority (99 percent) in the range of 11 to 80 ppm. Generally, high sulfate concentrations are associated with the low-flow stage of the Red River.

The following table contains a list of selected chemical constituents in water from the Atchafalaya River. It also shows maximum, minimum, and average concentrations (in ppm) occurring over the 3-year period (1953-55). The maximum concentration of iron only slightly exceeds the recommended limit 0.3 ppm for drinking water (table 4).

Concentrations of selected chemical constituents in Atchafalaya River water

	Concentrations, in ppm		
Constituent	**Maximum**	**Minimum**	**Average**
Bicarbonate	203	60	118
Calcium	58	16	38
Chloride	170	11	54
Iron	.37	.00	.10
Magnesium	19	4.1	10
Nitrate	5.6	1.0	2.8
Silica	20	7.6	12
Sodium plus potassium	100	11	39
Sulfate	100	11	48

Dissolved solids. Dissolved solids in the Atchafalaya River vary with discharge and range from about 130 to slightly above 500 ppm during the 3 years of record. During 1953-55, dissolved solids in water from the Atchafalaya River exceeded 500 ppm about 2 percent of the time (fig. 16).

The dissolved solids in water from the tributaries of the Atchafalaya River ranged as follows: Mississippi River near St. Francisville during the period 1954-64 was ap-

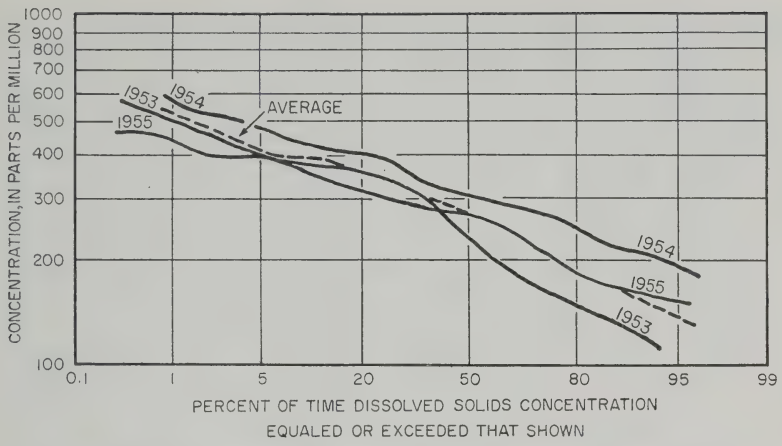

Figure 16. Duration curves of dissolved solids in the Atchafalaya River at Krotz Springs, 1953-55.

proximately 110 to 400 ppm (fig. 12) ; Red River at Alexandria during the period 1953-62 was approximately 100 to 1,300 ppm; Black River at Jonesville during the period 1959-64 was approximately 75 to 1,600 ppm. Thus, water that flows from the Mississippi River into the Atchafalaya River had a dilution effect upon the mixture of greater mineralized waters from the Red River and the Black River. The dilution effect is illustrated by comparison of the dissolved-solids curves on figure 16. In 1954, when the average flow of the Mississippi River through Lower Old River into the Atchafalaya River was at a minimum for the 3-year period (62,800 cfs), the dissolved-solids concentrations at Krotz Springs ranged from about 190 to 580 ppm. In 1953, when the average flow was about 79,500 cfs, the range was about 120 to 560 ppm; and in 1955, dissolved-solids concentrations were at a minimum, ranging from 150 to 470 ppm, when the average flow for the 3-year period was a maximum (104,700 cfs).

Hardness. Because water in the Atchafalaya River is a composite of that from three sources with different chemical character and discharges, the resultant mixture graphically causes a spread of plots of the hardness versus specific conductance rather than a linear relationship. (See fig. 17.) Hardness concentrations range from about 50 to slightly

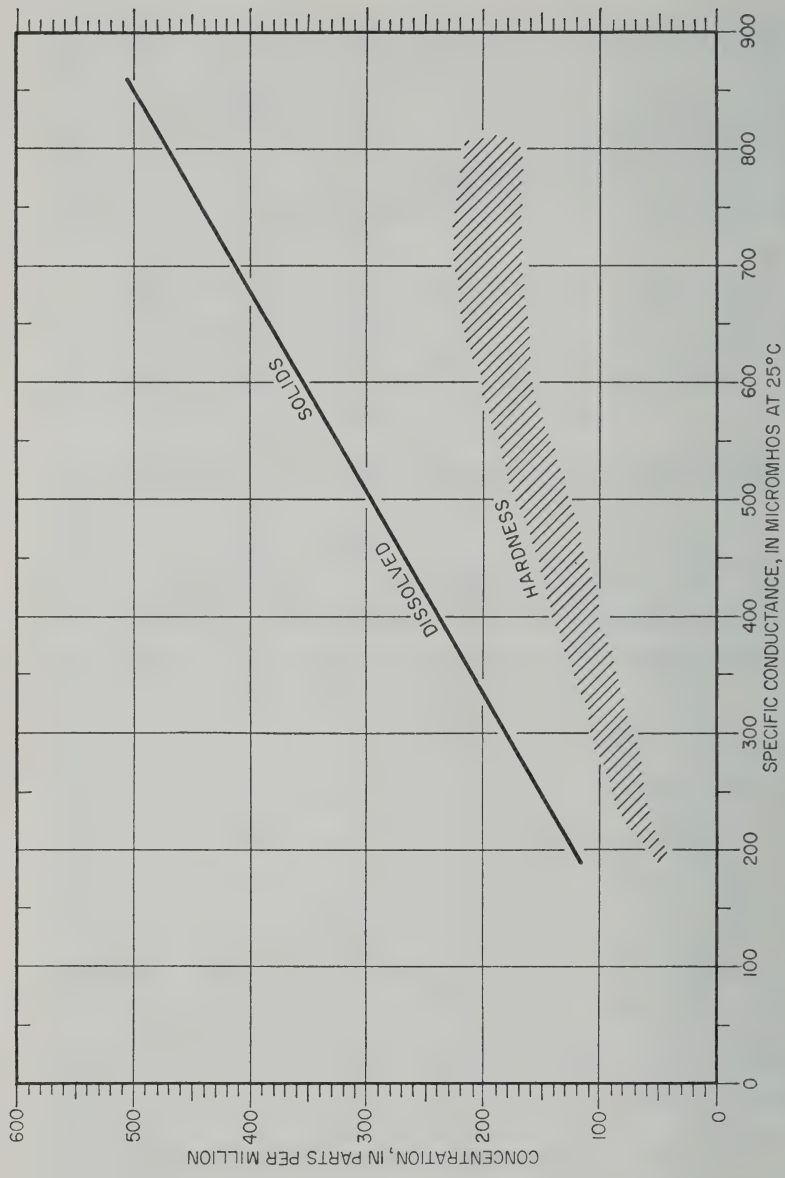

Figure 17. The relation of specific conductance to dissolved solids and hardness in the Atchafalaya River at Krotz Springs, 1953-55.

above 220 ppm, the area shown on the graph encloses about 95 percent of the plotted points. Water from the Atchafalaya River was very hard about 35 percent of the period of record and was soft less than 5 percent of this time.

pH, SAR, and color. Other quality parameters of the water from the Atchafalaya River that were measured during the 1953-55 period were pH, SAR, and color. The pH ranged from 7.2 to 8.6, indicating that the water from this river may be corrosive or scale-forming at times. The SAR values ranged from 0.6 to 3.0, indicating that the water is excellent for irrigation according to the classification of Todd (1963). The color of water in the Atchafalaya River is similar to that in the Mississippi River and ranges from 0 to 70 units. However, approximately 90 percent of the results were in the 10 to 60 unit range, indicating that the average color in the Atchafalaya River is slightly higher than in the Mississippi River.

Sediment. A comparison of monthly variations of average sediment concentrations with average monthly discharge is presented in figure 18. Compared to the Mississippi River (fig. 14), the average suspended sediment con-

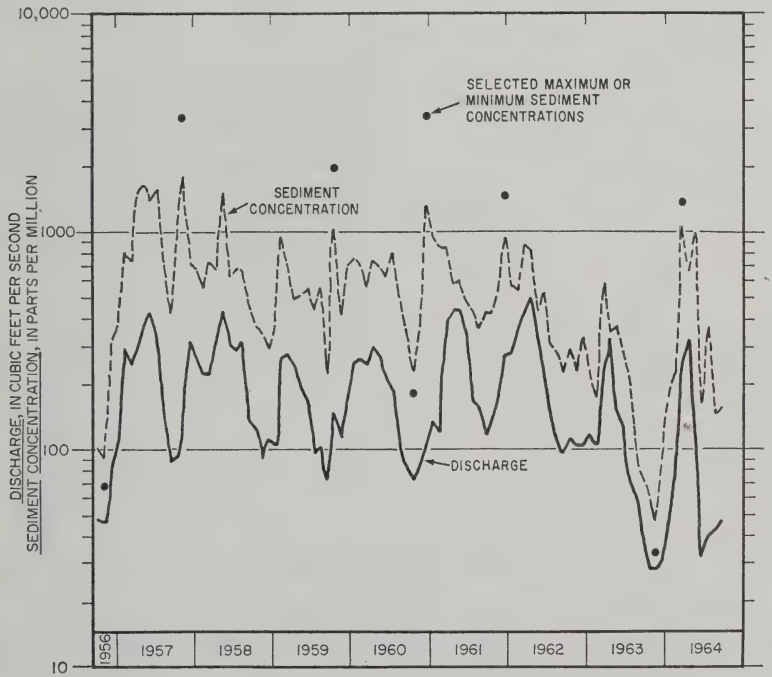

Figure 18. Comparison of average monthly sediment concentrations with average monthly discharge in the Atchafalaya River at Simmesport.

centration in the Atchafalaya River was slightly higher and ranged from about 35 to 3,500 ppm, 1956-65. Yearly cycles of sediment concentrations generally show that the larger concentrations occur during late winter and early spring months while minimum concentrations occur during late summer and early fall.

During the period 1951-62, the U.S. Army Corps of Engineers (New Orleans district) collected from the Atchafalaya River at Simmesport and analyzed 259 samples for particle size. The samples were collected so as to be uniformly distributed within the range of river discharge. The following summary is a breakdown of data similar to that given previously for sediment particle sizes in the Mississippi River.

Percent of sediment finer than a given particle size	100	90	80	70	60	50	40	30
Maximum particle size (mm)	0.55	0.30	0.22	0.16	0.13	0.10	0.08	0.065

Temperature. Extremes of water temperature of the Atchafalaya River at Krotz Springs ranged from 89° to 42°F, and the average water temperature was about 65°F for the period 1952-55. (See fig. 19.)

RACCOURCI OLD RIVER

Raccourci Old River, or Old River, as it is more commonly called, is an oxbow lake in northeastern Pointe Coupee Parish between the west Mississippi River levee and the river itself. The lake is about 12.5 miles long and has a surface area of about 6.5 square miles. At its southernmost point (locally known as Mondu Lake) it is nearly 8,500 feet wide. The deepest spot, about 75 feet (water surface at 20 ft above msl), is in the sharp bend near Mondu Lake (pl. 10). Most of the area surrounding the lake is at an altitude of less than 40 feet and is flooded by the Mississippi River during high stages. Maximum stages at Red River Landing (about 3 miles upstream) have exceeded 40 feet in 27 of the 37 years of record.

A control structure was completed in 1964 near the northeast end of Old River in a reach of channel known as

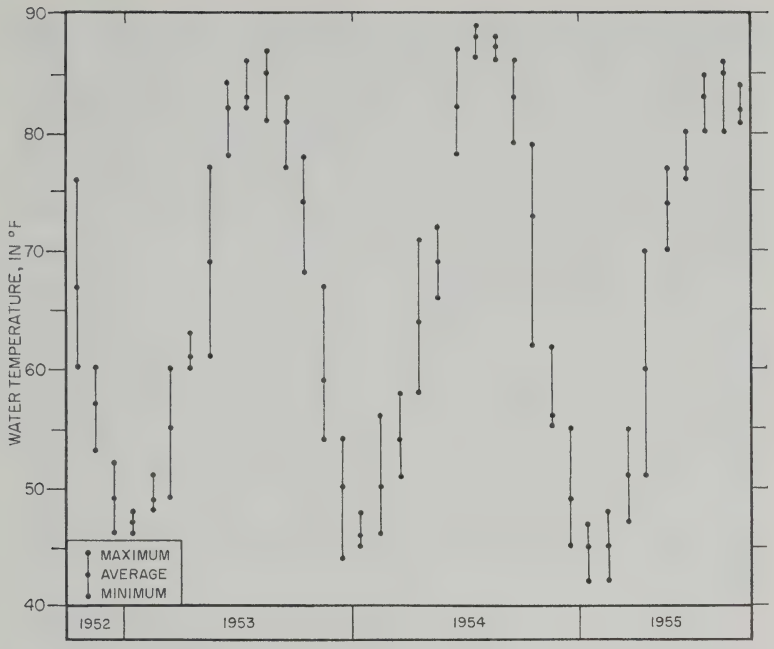

Figure 19. Monthly variation in water temperature in the Atchafalaya River at Krotz Springs.

the Narrows, which connects the lake with the Mississippi River. This structure permits control of lake level between 17 and 26 feet (Louisiana Dept. Public Works, unpublished data).

At a water-surface altitude of 17 feet, the lake contains about 17 billion gallons of water. With the lake at 26 feet, about 29 billion gallons are available; thus, it may be considered a large source of fresh water. Although primarily a recreational facility, Old River is a reservoir of fresh water that may be used for other purposes in the future.

Quality of Water from Raccourci Old River

The chemical quality of water from Raccourci Old River is similar to that of the Mississippi River during high-flow periods. The water is a calcium bicarbonate type with roughly the same percentages of sodium, chloride, and sulfates as that in Mississippi River water. The specific con-

ductance averages about 290 micromhos, and the average dissolved solids are relatively low (about 180 ppm). The water generally is moderately hard to hard, depending on the stage of the Mississippi River which causes overflow into Raccourci Old River. No significant changes in the chemical character of the water in Raccourci Old River are foreseen, unless the lake is isolated from Mississippi River overflow as is False River. (See table 5.)

Two bacterial samples collected along the south shore of the lake near some camp sites indicate that bacterial populations are relatively low (0-50 mpn[7]). This low number indicates a natural bacterial population, although the number of samples is not enough to indicate whether sewage is the primary cause of pollution. Natural lake conditions are generally unfavorable for the prolific growth of bacteria normally in sewage; however, increased recreation and other activities may result in increased bacteria populations.

INTERIOR STREAMS OF POINTE COUPEE PARISH

The levee system divides the parish into three distinct drainage areas: (1) the enclosed northern part of the parish, (2) the Morganza Floodway, and (3) the eastern part of the parish. The northern part of the parish is drained by Bayou Latenache. About 3 miles north of Melville, Bayou Latenache passes through the West Morganza Floodway levee at the Pointe Coupee drainage structure. (See pl. 1.) The opening in the structure is considered inadequate to handle runoff from heavy rainfall and local flooding may occur (Pointe Coupee Economic Development Committee, 1964). Also, the closing of the drainage structure during floodway operations will block all drainage of northern Pointe Coupee Parish, possibly resulting in additional flood problems.

Recording water-stage gages on Bayou Latenache are operated by the Corps of Engineers at the upstream and downstream side of the Pointe Coupee drainage structure. The maximum and minimum water stages at the upstream

[7]Most probable number of coliform bacteria per 100 milliliters of water.

gage were 33.10 feet (May 1953) and 13.90 feet (Sept. 1962) above msl, respectively. At the downstream gage, maximum and minimum stages were 31.1 feet (May 1953) and 13.90 feet (Sept. 1962), respectively. Discharge in Bayou Latenache is measured at the upstream gage, and the maximum observed flow of record was 2,320 cfs on December 18, 1959. The minimum of no flow has been observed on several occasions. After passing through the drainage structure, Bayou Latenache combines with a network of streams, sloughs, lakes, and pits and drains the Morganza Floodway.

Drainage in the eastern part of the parish is southward through a number of streams, the most important of which are Bayou Fordoche, Bayou Grosse Tete, Bayou Poydras, and Bayou Sere. Bayou Fordoche heads near Morganza and flows southward to merge with Bayou Grosse Tete near Livonia. Bayou Fordoche drains the land bordering Louisiana Highways 77 and 10, east of the Morganza Floodway. The bayou passes through culverts at Highways 10 and 77, east of Melville; the Corps of Engineers operates recording water-stage gages on the upstream and downstream side of Highway 77 (pl. 1). Maximum measured water-surface altitude at this location is 28.1 feet; however, stages could have exceeded this during periods of no record. The bayou is sometimes dry at the gage (U.S. Army Corps of Engineers, 1964c), but the maximum discharge is estimated to be about 1,500 to 2,000 cfs.

Bayou Grosse Tete heads in the area east of Frisco and flows westward and southward and leaves the parish near Maringouin. This bayou drains the major part of the parish east of the East Morganza Floodway levee including the False River area. The outflow of False River normally discharges into Bayou Grosse Tete through a canal. A recording water-stage gage operated by the Corps of Engineers is located at Frisco. Maximum and minimum water-surface altitudes of record were 17.27 feet (Sept. 1961) and 2.00 feet (Dec. 1962), respectively. The discharge of Bayou Grosse Tete is measured at Rosedale in West Baton Rouge Parish, south of Maringouin. The maximum observed flow of record was 2,385 cfs on May 20, 1953. The minimum of no flow has been recorded several times (U.S. Army Corps of Engineers, 1964c).

Bayou Poydras heads near Rougon and flows southward to cross U.S. Highway 190 at Erwinville, and drains the extreme southeastern part of Pointe Coupee Parish. About 2 miles of this bayou forms a part of the Pointe Coupee-West Baton Rouge Parish boundary. Bayou Sere is a prominent crevasse channel on the southern side of False River and heads in the swampy overflow area at the southeastern end of the lake. At stages above about 18 feet, water flows from False River into the bayou. Bayou Sere flows southward through a culvert under Louisiana Highway 416 and joins Bayou Grosse Tete after crossing U.S. Highway 190, west of Erwinville. Many other small streams, canals, ditches, and borrow pits in the parish serve either to store water or to conduct water to the larger streams. Some of these have no outlet and are depleted by evaporation, transpiration, or seepage.

Quality of Water from Interior Streams

Because streams in the parish do not receive water from streams outside the parish, their flow is entirely dependent upon rainfall within the parish limits. The rainfall runoff within the parish is of a similar chemical quality because it drains geologically similar terrain. Thus, all interior streams contain a calcium bicarbonate type water with concentrations of not more than 20 ppm of the other natural chemical constituents. The specific conductance of five samples taken during 1963-65 ranged from 100 to 350 micromhos and the dissolved solids ranged from approximately 80 to 240 ppm. The hardness varies from soft to hard. Chemical analyses of water from Bayou Grosse Tete, Bayou Fordoche, and Bayou Latenache are given in table 5.

Nitrate and dissolved-oxygen concentrations in water are two chemical parameters which can be used to indicate sewage and other types of organic pollution. Nitrate concentrations in water from Bayous Fordoche and Grosse Tete are about 0.2 to 0.5 ppm except after heavy rainfall, when the nitrate concentration is increased to about 2.5 ppm because of leaching from adjacent fertilized farmland and from barnyards. The normal saturation of dissolved oxygen in Bayou Grosse Tete, as measured at Frisco and Marin-

gouin, is about 90 to 95 percent; however, dissolved-oxygen determinations made near Livonia at about the same time, show about 75 percent of saturation, probably because of an increased amount of sewage entering Bayou Grosse Tete near Livonia. Further detailed study is needed to determine the seriousness and extent of the indicated pollution of these streams.

FALSE RIVER

False River is in the southeastern part of Pointe Coupee Parish and is a former meander of the Mississippi River, which was cut off about 1722 (Sternberg, 1956). The lake is about 10 miles long and, at its widest part, is about 4,000 feet wide near the town of New Roads. Its shape is the familiar "oxbow" curve which characterizes a Mississippi River loop "cutoff." The maximum depth, as indicated by a fathometer survey, is about 65 feet at a water-surface altitude of 15 feet (pl. 11). The lake contains about 22 billion gallons of water at this stage. A deep trough is on the outside of the curve (New Roads side), from where the bottom rises gradually toward The Island side.

The ends of the lake have filled considerably in the years since the cutoff, and "flats" of relatively shallow waters occupy large areas. Considerable aquatic vegetation is found in the flats, providing cover for fish. The vegetation thins out and disappears as depth increases; fathometer tracings indicate that vegetation ceased when depths exceeded about 10 feet.

The surface of False River normally fluctuates about 4 feet (between 14 and 18 feet above msl). Rainfall during hurricanes or extreme storms may raise the lake stage to as high as 22 feet; long periods of deficient rainfall may lower the stage to about 13 feet.

Hydrology of False River

After cutoff, False River was subjected to periodic flooding by the Mississippi River until the construction of the levee system, much in the same manner as in Raccourci Old River today. Inflow from the Mississippi River occurred at the northern end of False River through False Bayou;

TABLE 5. CHEMICAL ANALYSES OF WATER FROM SELECTED STREAMS AND LAKES IN POINTE COUPEE PARISH, LOUISIANA

Chemical constituents in parts per million

Date of Collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Hardness as $CaCO_3$		Sodium adsorption ratio (SAR)	Specific conductance (micromhos at 25°C)	pH	Color
													Calcium magnesium	Noncarbonate				
Raccourci Old River near Batchelor																		
7/29/64	5.8	0.00	36	7.6	12	2.0	115	33	13	0.1	0.2	179	121	27	0.5	287	7.4	10
10/10/64	8.3	.00	36	9.3	9.9	2.5	124	29	12	.1	.2	179	128	26	.4	290	7.0	10
False River near New Roads (65-Foot Depth)																		
6/ 8/64	11	0.03	31	12	9.0	4.5	162	2.4	5.2	0.2	4.6	175	125	0	0.3	279	7.5	15
4/23/65	7.2	3.0	33	7.4	7.1	3.8	142	8.4	4.0	.1	.8	146	113	0	.3	252	7.2	20
False River at New Roads (Surface)																		
11/18/63	5.0	0.00	20	11	10	3.8	137	0.2	4.7	0.2	0.7	155	97	0	0.4	234	7.4	10
4/13/64	2.5	0.00	26	10	8.7	4.8	142	8.0	4.7	0.0	0.1	152	106	0	0.4	244	7.3	15
7/21/64	8.8	.00	20	7.8	8.5	3.9	113	6.2	4.9	.1	.0	129	82	0	.4	204	7.5	15
10/10/64	7.3	.01	20	9.0	8.3	4.5	120	6.4	1.2	.2	.2	129	87	0	.4	207	6.9	10
False River at Oscar (Surface)																		
3/25/63	3.6	0.01	31	10	8.5	4.1	156	5.6	4.9	1.7	1.1	148	120	0	0.3	269	7.2	5

Bayou Grosse Tete at Frisco

4/13/64	4.5	0.01	29	11	9.9	3.9	151	8.8	4.4	0.3	0.4	156	118	0	0.4	263	7.4	15
10/10/64	7.3	0.02	18	7.3	6.2	4.5	97	7.6	1.8	0.0	1.1	108	75	0	0.3	175	6.9	20

Bayou Fordoche near Livonia

8/23/64	14	0.03	30	8.3	17	6.0	146	5.6	15	0.2	2.1	234	109	0	0.7	294	7.3	40

Bayou Latenache at Pointe Coupee Drainage Structure near Melville

4/13/64	14	0.19	42	15	9.0	3.3	187	23	6.3	0.4	0.8	232	168	15	0.3	339	7.5	100
10/10/64	9.0	.08	11	5.5	2.3	5.5	64	5.2	1.0	.1	.6	85	50	0	.1	122	6.6	40

outflow was at the southern end by The Chenal, or, when the water stage was high enough, through a number of crevasse channels that cut through the natural levee deposits. Final isolation of False River from the Mississippi River was achieved through construction of levees in 1812 (U.S. Army Corps of Engineers, 1940).

From the time of isolation, the main source of water for False River has been rainfall and, to a minor degree, ground-water discharge from the alluvial aquifer. A low-sill structure and drainage canal was constructed in 1947 near Oscar, on the west side of the lake, to help regulate the lake level and to prevent backflow from Bayou Grosse Tete into False River. This structure allows outflow into Bayou Grosse Tete at stages above 15 feet. At stages of about 18 feet, additional lake discharge occurs through Bayou Sere, an old crevasse channel at the southern end of False River. At stages above about 25 feet, additional discharge probably would occur through other former crevasse channels in the area.

Rainfall over the approximately 57-square mile drainage area of False River averaged about 58 inches a year for the period 1943-64. Drainage into False River is affected by a number of factors. Some water infiltrates into the soil and some is used through evapotranspiration. Assuming that 50 percent of the average yearly rainfall reaches the lake, and neglecting the effects of outflow, evapotranspiration, and ground-water discharge into the lake, an estimated volume of about 29 billion gallons would be available to False River.

Ground-water discharge into False River is occasionally a supplementary source of water. Because of the complex nature of the hydraulic relationships between False River, ground water in the alluvial aquifer, and the Mississippi River, only an approximation can be made of the amount of ground-water discharge into False River at any given time. The rate of ground-water movement into False River is estimated to be 1,600,000 gpd (2.5 cfs) at a high stage of the Mississippi River (about 40 feet), and a False River stage of about 15 feet.

False River contributes water to the alluvial aquifer

under certain conditions. First, when the stage of the Mississippi River falls below that of False River (fig. 20), a hydraulic gradient away from the lake is created. A contribution of lake water into the alluvial aquifer at a rate of about 400,000 gpd (0.6 cfs) occurs at a low stage of the Mississippi River (about 9 feet) in conjunction with a False River stage of about 15 feet.

Second, hydraulic gradients may be altered in the vicinity of False River due to a sudden stage rise during or after a period of intense rainfall. (See figs. 4 and 20.) However, the contribution of water to the alluvial aquifer is negligible and temporary. After the excess water is drained from the lake, former hydraulic gradients are approximately established.

Evaporation from False River is a natural process that removes vast quantities of water yearly. Although no evaporation data are available for the immediate area, an estimation based upon U.S. Weather Bureau evaporation studies is useful in determining the significance of evaporation in False River's water cycle. These studies indicate an average annual evaporation rate of about 48 inches for Pointe Coupee Parish (U.S. Dept. Commerce, 1959). If this rate is applied to False River, with a surface area of over 4.5 square miles, nearly 4 billion gallons of water (about 18 percent of the lake volume) is lost through evaporation each year. Average evaporation from False River is approximately equal to average rainfall on the lake surface. Thus, maintenance of the lake as a recreational source is primarily due to rainfall over the drainage area and to ground-water discharge.

The low-sill structure near Oscar is the normal outlet for False River, and provides 24 square feet of available cross section area for each foot of water level above the sill altitude of 15 feet. At a lake-surface altitude of 16.9 feet, about 160 cfs is discharged and at an altitude of 17.6 feet, about 220 cfs flows over the sill. At a maximum lake altitude of 22 feet, a discharge of about 500 cfs is estimated. During the period November 1963-May 1965, water stages exceeded the altitude of the sill for about 16.5 of 19 months (fig. 20), or about 87 percent of the time.

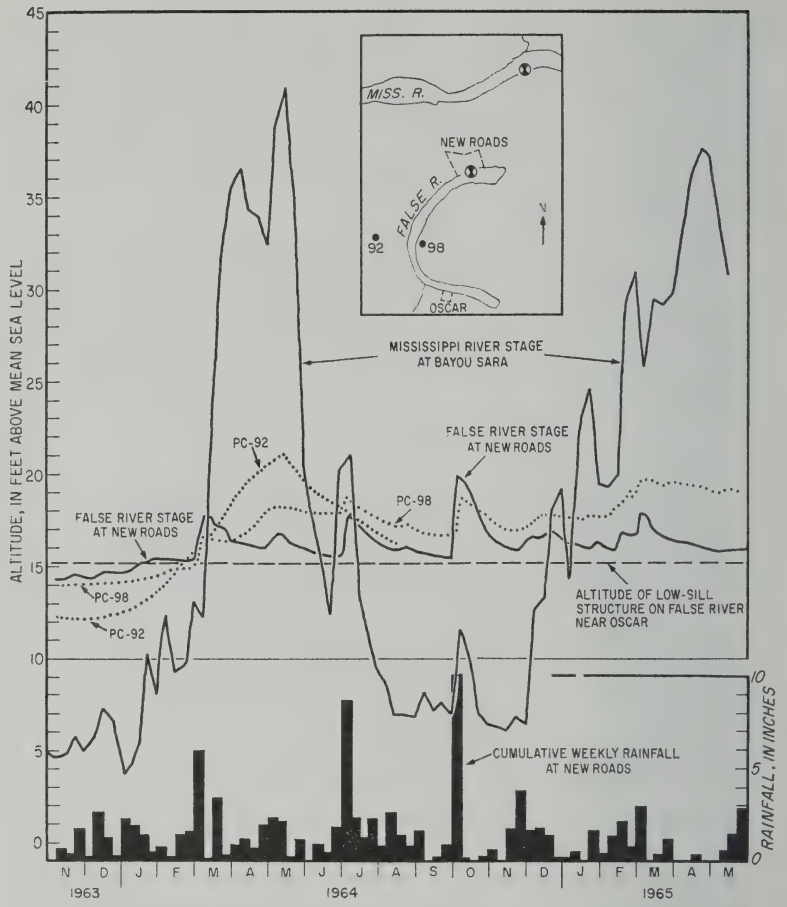

Figure 20. Hydraulic relations in the False River area between the Mississippi River, False River, the alluvial aquifer, and rainfall.

The maximum altitude of False River since the construction of the out-flow sill was in May 1953, when the stage reportedly reached about 22 feet. In October 1964, rainfall of nearly 10 inches from Hurricane Hilda sharply increased the lake level to an altitude of about 20 feet, an increase of about 4 feet in 24 hours over its prior stage.

During a period of deficient rainfall in the mid-1950's, the stage reportedly fell to about 13.5 feet. However, fluctuation of False River has not discouraged waterside development and False River is a "beehive" of recreational camps.

Chemical Quality of Water from False River

The chemical quality of water from False River is similar to that of the interior streams because rainfall runoff from surrounding areas replenishes the lake. The water is a calcium bicarbonate type with small amounts of chloride (0-10 ppm) and other ions. Compared to water from the Mississippi and Atchafalaya Rivers, water in False River is relatively low in dissolved solids. In October 1964 the dissolved solids was approximately 150 ppm and decreased to about 130 ppm during flood stage. At this time the water had a hardness of 100 ppm, which decreased to about 85 ppm during the flood stage. (See table 5.)

Nitrate concentrations at the surface range from 0.0 to 1.1 ppm. The higher nitrate concentrations may indicate that some sewage is being discharged into False River from various camp sites. As much as 4.6 ppm of nitrate has been recorded at a depth of about 65 feet.

The iron content of water in False River averages about 0.01 ppm at or near the surface, and at times may be as much as 3 ppm near the bottom of the lake. The higher iron content near the bottom may be due to (1) seepage from the alluvial aquifer that contains more mineralized water, (2) a chemical environment at the bottom during stagnation periods that provides a reducing environment (as contrasted to an oxidizing environment) whereby iron is kept in a more soluble ferrous oxidation state, or (3) a combination of these factors.

The specific conductance is almost constant in a vertical section at the three sampling times on False River (fig. 21) indicating the chemical quality of water is usually uniform vertically. However, the variations in specific conductance (170-230 micromhos) with time are due to natural conditions, such as (1) the effects of evaporation during dry periods; (2) heavy runoff after severe storms; and (3) the effects of a high Mississippi River stage, which may result in the movement of more highly mineralized water from the alluvial aquifer into False River.

Turbidity is the light-scattering property of water that is caused by suspended sediment, such as clay or silt, finely

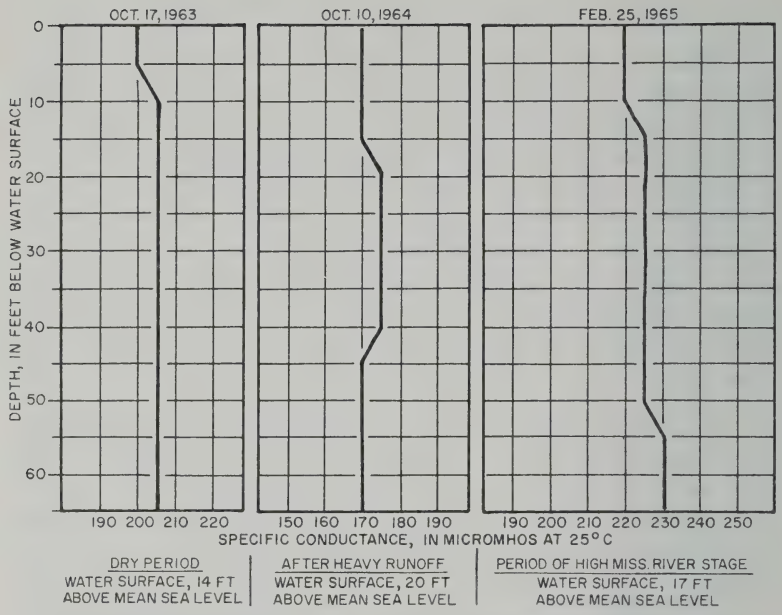

Figure 21. Variation of specific conductance with depth and various stage levels in False River.

divided organic matter, and micro-organisms. The turbidity of water from False River collected at five locations in April 1965 ranges from 0.5 to 2.5 ppm (as SiO_2). This is as low as would be expected since, at this time, the lake was calm, allowing the settling of the larger suspended particles. Turbidities as high as 30 to 40 ppm were measured at False River after periods of heavy rainfall during the flood conditions of October 1964. This turbid condition was caused by heavy runoff from banks and surrounding plowed areas that offered loose soil to be carried into the lake.

Water temperatures in False River vary with season, time of day, wind direction, and depth. The range of temperatures measured during the period October 1963 to October 1964 was 37° to 92°F. Water temperature varies with depth during summer stagnation periods when warmer, less dense water remains at the surface and colder, more dense water settles to the bottom of the lake. The difference between surface and bottom temperatures ranges from negligible during the winter to about 15°F during the summer. (See fig. 22.)

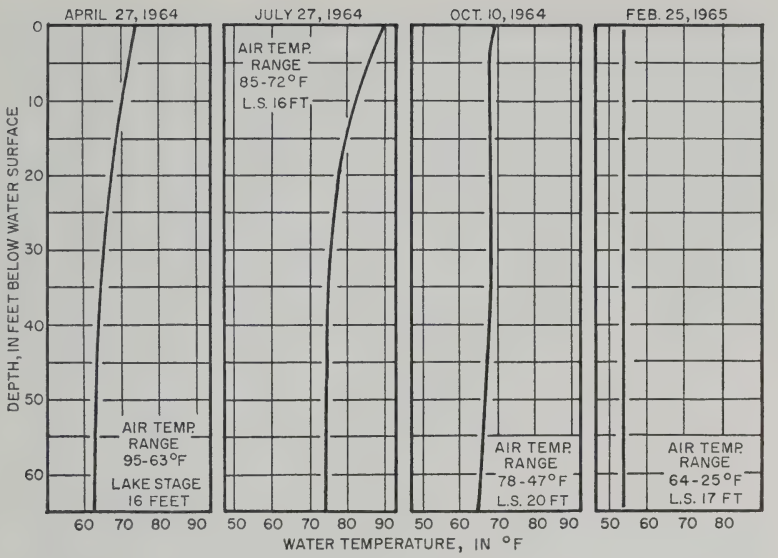

Figure 22. Variation of water temperature with depth in False River.

Dissolved-oxygen concentrations in False River depend upon many variable factors, such as temperature, sunlight, location and density of aquatic plants, water depth, periods of stagnation, wind activity, and bacterial abundance. The range of dissolved-oxygen concentration in samples collected on the surface was from about 3 ppm (41 percent saturation) to about 13 ppm (115 percent saturation). The lower levels (3 to 5 ppm) generally occur in the early morning hours (5 a.m.-7 a.m.) at locations where the water is shallow (up to 10 feet in depth) and there is abundant plantlife attached to the bottom. At night, photosynthetic activity of these plants ceases; but their respiration continues, depleting the oxygen concentration. Hot, sunny days increase the photosynthetic activity of plants, resulting in the higher oxygen concentrations in the water. A representative daily variation of dissolved oxygen at the surface, near the middle of False River, is shown in figure 23.

During periods when the air temperature is less than water temperature, the upper layers of lake water become colder and heavier than lower layers, causing turnover of water. This turnover results in uniform dissolved-oxygen levels from top to bottom. (See fig. 24.) At other times,

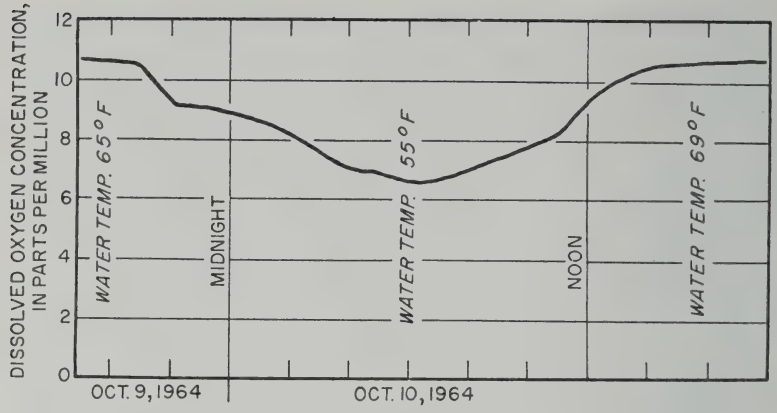

Figure 23. Surface variation of dissolved oxygen in False River.

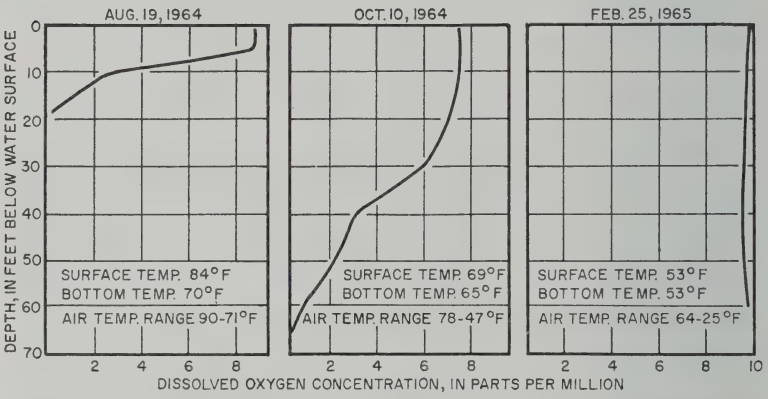

Figure 24. Variation of dissolved oxygen with depth in False River.

when there is little mixing of water, the dissolved oxygen is depleted in the lower layers of water where the oxygen is used to decompose dead plants. Plantlife generally does not thrive at greater depths of water because of a lack of sunlight. Consequently, during periods of stagnation or nonmixing of the upper and lower water layers, the water at greater depths is deficient in dissolved oxygen (fig. 24).

Because oxygen is needed to decay organic matter at the bottom of the lake and because oxygen is not available until the next turnover of water, a demand for oxygen is created at the bottom of the lake. According to Coker (1954,

p. 60), if the BOD[8] is below 3 ppm, there is a low degree of organic pollution; if it is between 3 and 5 ppm, there may be substantial pollution; and, if the BOD is greater than 5 ppm, there is serious pollution. The BOD measured in False River in April 1965, during a period of stagnation, was approximately 10 ppm at a depth of 62 feet, and about 1 ppm at the surface. The difference in BOD between the surface and bottom measurements indicates that there may have been 10 times the organic pollution potential near the bottom as at the surface at this time. However, during periods of water turnover, the BOD difference between the top and bottom of the lake may be equalized.

Bacterial Quality of Water from False River

During recent years recreational activity around False River has increased, leading to the development of seasonal tourist spots, motels, camp sites, fishing piers, sailing clubs, and homes. Many of these establishments were constructed in areas that were not served by a sewage disposal system; therefore, much of the sewage, partially treated and untreated, is being discharged into the lake. Evidence of this pollution is shown by coliform bacterial tests made from samples of water collected along the shorelines and in the center of the lake. All bacteria found in water are not harmful or pathogenic; however, many pathogenic bacteria will thrive in a water environment. The detection of coliform bacteria in water is an indication that other harmful bacteria may be present.

Bacteria samples from False River were collected at 20 locations at regular monthly or biweekly intervals, beginning October 1963 and continuing for 11 months. Each of the samples was collected at the same general location every month; some were collected along the shoreline (15 to 25 feet offshore), some near the middle of the lake, and others at the ends of the lake (fig. 25). After collection, the samples were iced and carried to a laboratory operated by the Louisiana Stream Control Commission, where they were analyzed and the coliform bacteria reported as mpn.

[8]Biochemical oxygen demand is a measure of the amount of oxygen required to oxidize organic matter in water during the process of decomposition by aerobic bacteria. The usual incubation period used in the measurement of BOD is 5 days.

The results of the sampling program did not show any consistent pattern as to heavy pollution at specific locations or at special seasons. The range in most probable number of coliform bacteria for samples collected was approximately 0 to 5500. The average at each sample location in False River was computed and a generalized map showing areas of varying degrees of coliform pollution was prepared (fig. 25).

Generally, the greater average concentration of bacteria (up to 1,400 mpn) occurs close to the shore on The Island side from several miles north of Dupont to about a mile east of Jarreau. This area has not been served by a sewerage system, consequently, overflow from filter beds, septic tanks, and other sewage disposal methods plus the runoff from stock pens and barnyards all contribute to this high pollution average. The average coliform count in the rest of the lake is generally 50-400 mpn, and probably is due to dilution as bacteria are transported from sources of pollution.

In summary, the results obtained indicate that temperature, pH, environment, oxygen, and dilution in False River usually affect the bacteria population. With regard to temperature, coliform bacteria grow best at the temperature of the human body, 98°F. The temperature range measured in False River was 37° to 92°F, which would tend to retard bacterial reproduction rate. Coliform bacteria reproduce in a pH range between 5 and 9, but the optimum is between 7 and 8. The pH range of water in False River was 7.5 to 10.0. A range of 8.5 to 10.0 occurs on hot sunny days when photosynthetic activity increases. A change of environment or habitat from the human or animal body to water will cause a high death rate of coliform bacteria. When bacteria are discharged into open water and are exposed to saturated oxygen levels in the water, a high death rate is expected (Hanes and others, 1964, p. 441). In certain locations water in False River may at times be supersaturated with oxygen (115 percent). Wind tends to cause a continuous mixing action of the water diluting the bacterial populations in some areas.

Widely accepted average limits for coliform bacterial

contamination of water used for swimming and for boating are 1,000 and 5,000 mpn, respectively (California State Water Quality Control Board, 1963, p. 119, 121). Individual

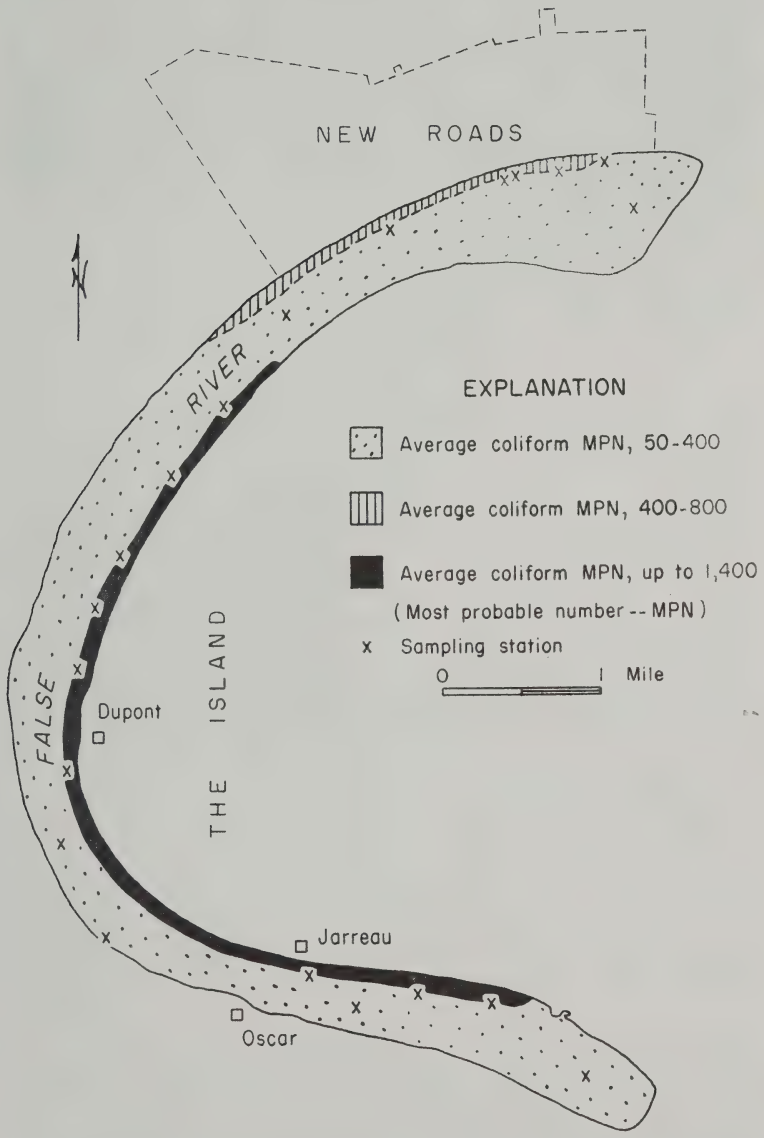

Figure 25. Average concentration of coliform bacteria in False River, 1963-64.

coliform counts in False River have, at times, exceeded both these limits; however, it is improbable that this high degree of pollution continually exists in the lake at any particular place. Increasing recreational activity on and around the lake could add to existing pollution. State and local health officials recognize the existing health hazard to the users of False River, and steps have been taken to reduce the present rate of pollution. However, it is also the responsibility of the public, who uses the lake, to cooperate with these officials so that the lake remains a clean, beautiful recreation area.

SUMMARY AND CONCLUSIONS

Pointe Coupee Parish is essentially a rural parish that could be on the verge of an overall cultural and industrial development in which its abundant water resources will play a major role. To the south, parishes bordering the Mississippi River are enjoying an unprecedented industrial expansion, which to a large degree has been enhanced by the availability of large water supplies. If this industrial expansion continues, it would seem to be inevitable that Pointe Coupee Parish should share in this boom. The large quantities of fresh ground water and the unlimited supply of surface water available to the parish represents one of its greatest assets for inducing industrial, agricultural, population, and recreational growth, but at present, relatively little use is being made of this asset.

GROUND WATER

Large quantities of fresh ground water are obtainable throughout Pointe Coupee Parish from a series of southerly dipping sand and gravel beds (aquifers) to maximum depths ranging from about 500 to over 2,600 feet below msl. In addition to the large reserve of fresh ground water, there are almost unlimited quantities of saline ground water, ranging from slightly brackish water to concentrated brines, in sands below the fresh-water-bearing aquifers. This represents a future resource to potential users of saline water, such as for desalinization treatment, industrial cooling, or for other industrial processes.

The lithologic and hydrologic continuity of the aquifers can be correlated with those underlying the neighboring parishes. For ease in the description of this series of fresh-water aquifers, sands are grouped on the basis of similar hydrologic characteristics. These zones are the hydraulic zones 1, 2, and 3. Some individual sand units have been recognized and correlated with those named in the Baton Rouge area.

The following tables present a broad summary of the hydrologic and quality-of-water characteristics of the aquifers underlying Pointe Coupee Parish. Aquifer characteristics north of Morganza are summarized by zones, and those to the south, by specific aquifer in each zone.

Generalized hydrologic characteristics of aquifers underlying Pointe Coupee Parish

Zone or aquifer	Average sand thickness (feet)	Range of sand thickness (feet)	Average Coefficient of Transmissibility (gpd/ft)	Average Coefficient of Permeability (gpd/ft^2)	Potential yield of wells (gpm)	1964 Water levels (feet above or below land surface)	Average[1] water-level decline rates (ft/yr)
Alluvial aquifer	175	50–400	350,000	2,000	5,000	+ 5 to − 30	None
Zone 1 north of Morganza			Not Generally	Present			
"600-foot" sand	100	50–225	75,000	750	1,000–2,000	+ 5 to − 25	Not known
"800-foot" and (or) "1,000-foot" sands	75	0–150	50,000	650	1,000	+ 5 to − 25	Not known
"1,200-foot" sand	100	0–250	100,000	1,000	2,000	+ 5 to − 25	½–1¾
Zone 2 north of Morganza	75	25–125	50,000	650	1,000–2,000	+10 to − 5	½
"1,500-foot" sand	75	0–200	65,000	850	1,000–2,000	as much as +15	½
"1,700-foot" sand	100	0–200	100,000	1,000	2,000	as much as +25	½
"2,000-foot" sand	100	0–200	100,000	1,000	2,000	as much as +30	½–5½
Zone 3 north of Morganza	75	25–100	75,000	1,000	1,000–2,000	0 to +15	½
"2,400-foot" sand	150	50–200	225,000	1,500	2,000–3,000	as much as +50	1½
"2,800-foot" sand	200	50–400	300,000	1,500	2,000–3,000	as much as +60	1½–3½

[1]Based on pumping rates prior to 1964.

Generalized quality-of-water characteristics of the aquifers underlying Pointe Coupee Parish

Zone or aquifer	Water types where fresh	Dissolved solids (ppm)	Hardness (ppm)	pH	Batchelor	Erwinville	Fordoche	Innis	Krotz Springs	Lettsworth	Livonia	Lottie	Maringouin	Melville	Morganza	New Roads	Simmesport
Alluvial aquifer	calcium bicarbonate	200–600	200–400	6.5–7.0	F	F	S	F	S	F	S	S	S	S	F	F	F
Zone 1 north of Morganza.	Not	Generally	Present														
"600-foot" sand	calcium bicarbonate	Not known	Not known	Not known	—	F	S	—	S	—	S	S	?	—	—	F	—
"800-foot" and (or) "1,000-foot" sands	calcium bicarbonate	Not known	Not known	Not known	—	F	?	—	S	—	S	S	?	?	—	F	—
"1,200-foot" sand	calcium + sodium bicarbonate	150–275	5–50	6.9–8.4	—	F	F	—	F	—	F	F	F	F	—	F	—
Zone 2 north of Morganza.	calcium + sodium bicarbonate	175–450	5–85	7.2–8.5	F	—	—	F	—	F	—	—	—	—	F	—	F
"1,500-foot" sand	sodium bicarbonate	Not known	5–10	7.0	—	F	S	—	S	—	F	S	F	F	—	F	—
"1,700-foot" sand	sodium bicarbonate	200–450	2–10	7.5–8.6	—	F	F	—	F	—	F	S	—	F	F	F	—
"2,000-foot" sand	sodium bicarbonate	200–350	2–10	7.5–8.9	F	F	F	F	S	—	F	S	F	F	F	F	F
Zone 3 north of Morganza.	sodium bicarbonate	250–575	5–75	7.0–8.7	F	—	—	—	—	F	—	—	—	—	F	—	S
"2,400-foot" sand	sodium bicarbonate	325–1,250	0–10	7.2–9.2	—	F	F	—	S	—	F	S	F	F	F	F	—
"2,800-foot" sand	sodium bicarbonate	225–675	0–10	8.2–9.3	—	F	F	—	S	—	F	S	S	F	F	F	—

F, aquifer contains fresh water at or near.
S, aquifer contains salt water at or near.
—, aquifer not present.

The rate of ground-water consumption in Pointe Coupee Parish for 1964 is estimated to be over 3.6 mgd. The following table summarizes these withdrawals by principal use and by aquifer zone.

Estimated 1964 ground-water consumption in Pointe Coupee Parish, in million gallons per day

	Alluvial aquifer	Zone 1	Zone 2	Zone 3	Total
Public supply	.....	.....	0.03	0.45	0.48
Rural-domestic (incl. livestock)	0.05	0.02	.06	.35	.48
Industrial and commercial	1.70	.....	.01	.20	1.91
Irrigation	.75	.....	.....	.....	.75
Total	2.50	0.02	0.10	1.00	3.62

GROUND-WATER PROBLEMS

Alluvial Aquifer

Salt water is in the bottom of the alluvial aquifer in the southwestern part of the parish, and large withdrawals from high-capacity wells may cause vertical movement of the salt water into wells. Proper spacing of wells in a well field, use of a scavenger-well system as described by Long (1965), or controlled pumping rates may minimize this problem.

Zone 1 Aquifers

The acidic properties (pH less than 7.0) of water near recharge areas may cause corrosion problems to iron well casings, screens, pumps, and distribution systems, which will result in higher iron content of the pumped water. The use of plastic well systems, airlift pumps, or settling tanks will reduce corrosion and the iron content of the water. Northward movement of salt water is a potential problem in the "600-foot," "800-foot," and "1,000-foot" sands in the Livonia-Fordoche area. More data are required to map the salt-water fronts in these aquifers.

Zone 2 Aquifers

Water-level decline in the "2,000-foot" sand of zone 2 is as much as 5.5 feet a year in the southeastern part of the

parish. This decline is largely due to pumping in the Baton Rouge area. Existing wells in this section of the parish will need pumps capable of lifting water from depths greater than 20 feet in 8 to 10 years. Those who plan to construct wells in this sand should take this eventuality into consideration. Potential salt-water encroachment in the aquifers of zone 2 is not adequately defined along the Tepetate-Baton Rouge fault zone. More data are required along the fault zone to determine if the fault is an effective barrier to the potential northward movement of salt water in these aquifers.

Zone 3 Aquifers

Water-level declines in the "2,800-foot" sand are over 3 feet a year in some areas due to local withdrawals. If this rate continues or increases, pumps will be needed in 15 to 20 years. To reduce this rate of decline, consideration should be given to the construction of new wells in shallower sands in order to more evenly distribute withdrawals.

Salt-water encroachment is a possibility in zone 3 sands north of the fault zone in the Livonia area and also in some sands in the northern part of the parish. More data are required to map the positions of salt-water fronts in these aquifers. Other water-quality problems are excess fluoride and color, which occur locally in the "2,800-foot" sand. Water containing high fluoride may be diluted with water containing little or no fluoride. Color in water is generally reduced during standard water treatment procedures.

SURFACE WATER

The flow of the Mississippi-Atchafalaya-Old River stream system is adequately regulated by a network of levees and control structures to prevent flood inundation of the parish and to assure proper distribution of flow in each of the channels. The main utility of these streams to Pointe Coupee Parish is their navigability. An ample supply of water in these streams is available at all times of the year for various industrial requirements (with appropriate treatment) and for irrigation purposes.

Pointe Coupee Parish has a separate and distinct drainage system apart from the Mississippi-Atchafalaya-Old River system. The levee system, which encloses the parish on all sides except to the south, isolates the parish with respect to all other streams outside the parish. A single exception is the time the Morganza Floodway is used, when some of the flow of the Mississippi River is diverted into the central and western parts of the parish.

Water from the interior streams generally is suitable for irrigation or stock use; however, since the source of water depends on rainfall, and since occasional periods of no flow have been observed in some of the larger stream channels, these small streams are not always a dependable source of supply. Availability of water from the major interior streams in Pointe Coupee Parish at any given time could vary within an estimated discharge range of 0 to 5,000 cfs.

Raccourci Old River and False River are former channels of the Mississippi River that have been cut off from the main stream and are the largest reservoirs of surface water within the parish. Raccourci Old River is not completely isolated from the Mississippi and is still subject to periodic overflow at high stages of the Mississippi. A control structure at one end of Old River maintains a minimum lake stage for recreational purposes. As a result of this control, Raccourci Old River normally stores between 20 and 30 billion gallons of water.

Unlike Raccourci Old River, False River is protected from the Mississippi River by levees; thus, rainfall runoff and ground-water discharge are its principal sources of water. False River is estimated to contain over 20 billion gallons of water, which is a potential source of public-supply, industrial, or irrigation water for the southeastern part of the parish.

The availability of surface water in Pointe Coupee Parish is limited only by the amount of flow in the Mississippi and Atchafalaya Rivers and by the 60-inch average rainfall which replenishes interior streams, lakes, canals, and borrow pits. The present uses of surface water in the parish are largely nonconsumptive—that is, the water is used for

recreation and transportation, and the character of the water is not changed by these uses. Consumptive use of surface water for stock and irrigation is estimated to be only about 0.25-0.50 mgd. This amount is slightly more than 10 percent of the total water use in the parish, and is evidence that the vast supply of surface water is relatively untapped.

The following table summarizes streamflow and water quality characteristics of the most important streams of the parish.

Generalized streamflow and quality-of-water characteristics of streams in Pointe Coupee Parish

	Discharge (cfs)		Stage (ft msl)		Dissolved solids (ppm)	Hardness (ppm)	pH	Range of temperature (°F)
	Max.	Min.	Max.	Min.				
Atchafalaya River ..	660,000	10,500	59	1	130–550	50–220	7.2–8.6	42-89
Bayou Fordoche....	[a]1,500–2,000	0	28	(b)	80–250	[a]50–150	[a]6.5–7.5	.....
Bayou Grosse Tete..	2,380	0	17	2	100–150	75–120	6.9–7.4	.....
Bayou Latanache...	2,320	0	33	14	80–230	50–170	6.6–7.5	.....
False River.....	[a]500	0	[a]22	[a]13	120–180	80–120	6.9–7.5	37-92
Mississippi River....	1,700,000	75,000	62	4	110–400	70–200	6.7–8.2	34-88
Raccourci Old River	.....	.....	[a]50–60	[a]10–15	150–200	60–180	7.0–8.0	.....

[a]—Estimated.
[b]—No flow in stream.

SURFACE-WATER PROBLEMS

Mississippi River

Although a channel is open to shallow-draft barge traffic, deep-draft vessels cannot proceed up the Mississippi River past the port of Baton Rouge. About 25 miles of channel deepening and maintenance is required to provide access to Pointe Coupee Parish by oceangoing vessels.

Atchafalaya River

The operation of the Old River Control complex has resulted in lower average stages and discharges of the Atchafalaya River because less water is entering from the Mississippi River. Consequently, a larger percentage of water in the Atchafalaya is composed of flow from the more min-

eralized water of the Red and Black Rivers. This increases the average mineral content of the Atchafalaya, especially during low flow. Further study will be necessary to determine new averages, maxima, and minima of the chemical constituents, and their potential effects on the uses of the water.

Raccourci Old River

Periodic flooding of Raccourci Old River by the Mississippi River has the effect of limiting potential development around the lake. Isolation from the Mississippi by a levee system would prevent extreme high water stages in Raccourci Old River and enhance development of the area in a manner similar to that near False River.

Interior Streams

Because of the irregularity of flow in the interior drainage system of the parish, little use is likely to be made of the water other than for intermittent irrigation and stock needs and some recreational use. Increase in population of the parish will increase the sewage content of these streams, causing potential health hazards to users of these streams as well as to those who live along the banks.

False River

The greatest source of pollution in False River is from partially treated and untreated sewage that is discharged directly into False River from a number of camps and homes surrounding the lake. Bacterial counts, at times, exceed accepted limits for bathing and boating and ranged from 0 to 5,500 mpn. In general, areas along the lake not served by a sewer system contributed most of the bacterial pollution; however, no uniform results were observed that could pinpoint specific areas as constantly contributing a high proportion of pollution.

REFERENCES

REFERENCES CITED

California State Water Quality Control Board
1963 Water quality criteria 2d ed.: California State Water Quality Control Board Pub. 3-A, 548 p.

Cardwell, G. T.
1960 (with Rollo, J. R.) Interim report on ground-water conditions between Baton Rouge and New Orleans, Louisiana: Louisiana Dept. Conserv. and Louisiana Dept. Public Works Water Resources Pamph. 9, 44 p.

Coker, R. E.
1954 Streams, lakes, ponds: Chapel Hill, N. C., North Carolina Univ. Press, 327 p.

Epstein, J. B.
1962 (See Snider, J. L.)

Fenneman, N. M.
1938 Physiography of Eastern United States: New York and London, McGraw-Hill Book Co., Inc., 714 p.

Fisk, H. N.
1940 Geology of Avoyelles and Rapides Parishes: Louisiana Dept. Conserv. Geol. Bull. 18, 240 p.

1944 Geological investigation of the alluvial valley of the lower Mississippi River: U.S. Dept. Army, Corps of Engineers, Mississippi River Comm., 78 p. [1945].

1947 Fine-grained alluvial deposits and their effects on Mississippi River activity: U.S. Dept. Army, Corps of Engineers, Mississippi River Comm., Waterways Expt. Sta., v. 2, pls. 20-21, 64.

1952 Geological investigation of the Atchafalaya basin and the problem of Mississippi River diversion: U.S. Dept. Army, Corps of Engineers, Mississippi River Comm., Waterways Expt. Sta., v. 1, 145 p.

Forbes, M. J., Jr.
1961 (See Snider, J. L.)

Hanes, N. B.
1964 (with Sarles, W. B., and Rohlich, G. A.) Dissolved oxygen and survival of coliform organisms and enterococci: Am. Water Works Assoc. Jour., v. 56, no. 4, p. 441-446.

Harder, A. H.
1953 (See Hodges, A. L., Jr.)

1965 (with Holden, W. R.) Measurement of gas in ground water: Am. Geophys. Union, Water Resources Research, v. 1, no. 1, p. 75-82.

Hodges, A. L., Jr.
1963 (with Rogers, S. M., and Harder, A. H.) Gas and brackish water in fresh-water aquifers, Lake Charles area, Louisiana: Louisiana Dept. Conserv. and Louisiana Dept. Public Works Water Resources Pamph. 13, 35 p.

Holden, W. R.
1965 (See Harder, A. H.)

Jones, P. H.
1954 (with Turcan, A. N., Jr., and Skibitzke, H. E.) Geology and ground-water resources of southwestern Louisiana: Louisiana Dept. Conserv. Geol. Bull. 30, 285 p.

Kapustka, S. F.
1964 Chemical composition of surface waters of Louisiana, 1943-1958: Louisiana Dept. Public Works, 212 p.

Latimer, R. A.
1951 (with Schweizer, C. W.) The Atchafalaya River study: U.S. Dept. Army, Corps of Engineers, Mississippi River Comm., v. 1, 47 p.

Long, R. A.
1965 Feasibility of a scavenger-well system as a solution to the problem of vertical salt-water encroachment: Louisiana Dept. Conserv. and Louisiana Dept. Public Works Pamph. 15, 27 p.

Louisiana Department of Public Works
1946 (with Pointe Coupee Parish Planning Board) Pointe Coupee Parish—resources and facilities: Baton Rouge, La., p. 30-34.

1956 (with Pointe Coupee Parish Planning Board) Pointe Coupee Parish—resources and facilities: Baton Rouge, La., p. 37-43.

Meyer, R. R.
1955 (with Turcan, A. N., Jr.) Geology and ground-water resources of the Baton Rouge area, Louisiana: U.S. Geol. Survey Water-Supply Paper 1296, 138 p.

Morgan, C. O.
1961 Ground-water conditions in the Baton Rouge area, 1954-59, with special reference to increased pumpage: Louisiana Dept. Conserv. and Louisiana Dept. Public Works Water Resources Bull. 2, 78 p.

1963 Ground-water resources of East Feliciana and West Feliciana Parishes, Louisiana: Louisiana Dept. Public Works, 58 p.

1964 (with Winner, M. D., Jr.) Salt-water encroachment in aquifers of the Baton Rouge area—preliminary report and proposal: Louisiana Dept. Public Works, 37 p.

Murray, G. E.
1961 Geology of the Atlantic and Gulf coastal province of North America: New York, Harper & Bros., p. 188-190.

Pointe Coupee Economic Development Committee
1964 Economic development program for Pointe Coupee Parish, Louisiana, 1964: New Roads, La., Pointe Coupee Area Devel. Comm., 37 p.

Pointe Coupee Parish Planning Board
1946 (See Louisiana Department of Public Works)

1956 (See Louisiana Department of Public Works)

Rogers, S. M.
1963 (See Hodges, A. L., Jr.)

Rohlich, G. A.
1964 (See Hanes, N. B.)

Rollo, J. R.
1960 Ground water in Louisiana: Louisiana Dept. Conserv. and Louisiana Dept. Public Works Water Resources Bull. 1, 84 p.

1960 (See Cardwell, G. T.)

Sarles, W. B.
1964 (See Hanes, N. B.)

Schweizer, C. W.
1951 (See Latimer, R. A.)

Skibitzke, H. E.
1954 (See Jones, P. H.)

Snider, J. L.
1961 (with Forbes, M. J., Jr.) Pumpage of water in Louisiana, 1960: Louisiana Dept. Public Works and Louisiana Dept. Conserv., 6 p.

1962 (with Winner, M. D., Jr., and Epstein, J. B.) Ground water for Louisiana's public supplies: Louisiana Dept. Public Works, p. 160-166.

Sternberg, H. O.
1956 A contribution to the geomorphology of the False River area, Louisiana: Baton Rouge, La., Louisiana State Univ. Doctoral Dissert., 124 p.

Todd, D. K.
1963 Ground water hydrology: New York, John Wiley & Sons, Inc., 336 p.

Turcan, A. N., Jr.
1954 (See Jones, P. H.)

1955 (See Meyer, R. R.)

U.S. Agricultural Research Service
1965 Proceedings of the Federal Inter-agency Sedimentation Conference, 1963: U.S. Dept. Agriculture, Misc. Pub. 970, 933 p.

U.S. Department of the Army, Corps of Engineers
1940 The Mississippi River: Mississippi River Com., 82 p.

1955 Annual maximum, minimum, and mean discharges of the Mississippi River and its outlets and tributaries to 1953: Mississippi River Comm., 146 p.

1956 Mississippi River and tributaries, Old River Control, low-sill structure—pumping tests on deep well system for dewatering excavation: Mississippi River Comm., LMVD Soils Div., Waterways Expt. Sta., Misc. Paper 3-185, 39 p.

1964a Atchafalaya outlet, Mississippi River and tributaries: Mississippi River Comm., 2 p.

1964b Flood control and navigation maps of the Mississippi River, Cario, Illinois to the Gulf of Mexico, La. 32d ed.: Mississippi River Comm., maps 42-45.

1964c Stages and discharges of the Mississippi River and tributaries and other streams and waterways in the New Orleans district for 1961-1962: Mississippi River Comm., 378 p.

1965 Hydrographic survey, 1961-63: Mississippi River Comm., sheets 5-21.

U.S. Department of Commerce
1959 Evaporation maps for the United States: Weather Bur. pub., Tech. Paper 37, 13 p.

U.S. Public Health Service
1962 Drinking water standards: Public Health Service Pub. 956, 61 p.

Winner, M. D., Jr.
1962 (See Snider, J. L.)

1964 (See Morgan, C. O.)

SELECTED REFERENCES

The following list of selected references are presented to supplement the publications cited in text. Most of these selected references are annotated for the convenience of the reader who may wish to locate other basic water records, or pursue other similar facts pertaining to Pointe Coupee Parish.

Harris, G. D.
1905 Underground waters of southern Louisiana, in Harris, G. D., Veatch, A. C., and others, A report on the underground waters of Louisiana: Louisiana State Expt. Sta., Louisiana Geol. Survey Bull. 1, pt. 1, 77 p.

The report mentions "poor water" at 120 feet at New Roads and Batchelor (p. 52), probably referring to the hardness and iron content of water from the alluvial aquifer.

Maher, J. C.
1939 Fluoride in the ground water of Avoyelles and Rapides Parishes, Louisiana: Louisiana Dept. Conserv. Geol. Pamph. 1, 23 p.

Similar problems on the nature of the occurrence of fluoride in ground water exist in Pointe Coupee Parish, which borders Avoyelles Parish.

Russell, R. J.
1939 Louisiana stream patterns: Am. Assoc. Petroleum Geologists Bull., v. 23, pt. 2, p. 1199-1227.

The paper discusses stream types and patterns in Louisiana, and mentions False River, Atchafalaya River, Bayou Fordoche, Bayou Grosse Tete, and Bayou Maringouin in the discussion.

U.S. Department of the Army, Corps of Engineers
1951 Stages of the Mississippi River and tributaries and other streams and waterways in the New Orleans District for 1950: U.S. Dept. Army, Corps of Engineers, New Orleans Dist., 380 p.

Last of a series of yearly basic-data reports that record stage measurements of some streams in Pointe Coupee Parish; it is superseded by another series of reports giving both stage and discharge measurements.

1961 Water resources development by the U.S. Army Corps of Engineers in Louisiana: Mississippi River Comm., 95 p.
One of a series of progress reports describing completed and projected navigation and flood-control projects, such as the Morganza Floodway, the Atchafalaya drainage basin work, and the Old River Control structures.

1965 Stages and discharges of the Mississippi River and its outlets and tributaries, 1963: Mississippi River Comm., 273 p.
Yearly basic-data reports since 1943 that list the stages and discharges of the Mississippi River and its principal outlets and tributaries. This series of reports does not list data for the smaller streams as, for example, in similar reports for the New Orleans Engineer District, although there is some overlap of data in two series of reports.

U.S. Geological Survey

1956 Water levels and artesian pressures in observation wells in the United States, 1954, pt. 4, South-Central States: U.S. Geol. Survey Water-Supply Paper 1324, 230 p.
Basic ground-water data. Records several water-level measurements in well PC-45 (p. 68).

1957 Water levels and artesian pressures in observation wells in the United States, 1955, pt. 4, South-Central States: U.S. Geol. Survey Water-Supply Paper 1407, 216 p.
Basic ground-water data. Records water levels in well PC-49 (p. 63-64).

1962 Ground-water levels in the United States, 1956-59, South-Central States: U.S. Geol. Survey Water-Supply Paper 1549, 192 p.
Basic ground-water data. Records water levels in well PC-49 (p. 53).

U.S. Public Health Service

1963 1962 inventory-municipal waste facilities: Public Health Service Pub. 1065, v. 7, 130 p.
The report describes the waste disposal facilities of the communities of Morganza and New Roads, and gives some information regarding potential sewage contamination of streams.

Upper Delta Soil and Water Conservation District

1964 Upper Delta Soil and Water Conservation District program: Pointe Coupee Parish Police Jury and West Baton Rouge Police Jury, 23 p.

Veatch, A. C.

1906 Geology and underground water resources of northern Louisiana, with notes on adjoining districts, in Geological Survey of Louisiana, report of 1905: Louisiana State Expt. Sta., Louisiana Geol. Survey Bull. 4, p. 249-457.
A description of three wells screened in the alluvial aquifers in Pointe Coupee Parish is given on p. 396.

TABLE 2. RECORDS OF SELECTED WELLS IN AND AROUND POINTE COUPEE PARISH, LOUISIANA

Location: See plate 1 for locations of wells.
Aquifer: A, Alluvial aquifer; Z1, Z2, or Z3—hydraulic zones; "2,000-ft", a correlative unit of an aquifer of the Baton Rouge area such as the "2,000-ft" sand.
Altitude: Estimated land-surface altitudes at well site; given to nearest tenth of a foot where measured.
Yield: Given as flowing yields; p, a pumped yield.
Water level: Measured water levels given to nearest tenth of a foot: all others are reported.
Use: D, domestic; I, industrial; Ir, irrigation; N, not in use; O, observation; P, public supply; S, stock.
Remarks: C, chemical analysis given in table 3.

Well No.	Owner	Driller	Year completed	Aquifer	Altitude	Depth (feet)	Diameter (inches)	Screened interval(s) (feet)	Yield (gpm)	Date of measurement	Water level(s) (feet above or below lsd)	Date of measurement	Use	Remarks
T. 1 S., R. 6 E.														
Av- 37	Town of Simmesport	B. M. Crooks	1953	Z2	45	398	8	370– 398	p, 100	Jan. 1953	−12	Jan. 1953	P	Specific capacity 12.5 at 100 gpm; C.
T. 1 S., R. 7 E.														
PC - 11	H. P. Mounger	F. K. McDermott	1940	Z2	42	442	2		3	July 1942	+12.1	Feb. 1961	D, S	C.
- 23	W. R. Coates			Z2	46	422	2	412– 422			+13	Sept. 1947	D, S	
- 64	Frank Merrick	D. K. Summers	1957	Z2	45	473	2	408– 418 453– 473			+ 2	July 1957	N	Test hole to 671 ft; drill-stem test yielded water with over 1,500 ppm chloride at this depth.
-134	W. T. Coates	D. K. Summers	1948	Z3	44	847	4	827– 847			+21	Aug. 1948	D	
T. 1 S., R. 8 E.														
PC - 71	U.S. Army Corps of Engineers	D. K. Summers	1960	Z3	40	611	8 - 6	571– 611			+ 5	June 1960	P	Well reworked; 4-in screen installed inside 6-in casing.
-107	John Miglicco	A. J. Hebert, Sr.	1955	Z2	44	400±	2				+ 3.8	May 1964	D	Well flows at high stage of Miss. River; C.
-128	Albert Cline, Jr.	F. K. McDermott	1946	Z3	41	960	2	930– 960			− 2.6 +40	Sept. 1964 1946	D	

T. 1 S., R. 5 W.

WF - 22	La. State Penal Farm	D. K. Summers	1951	Z3	60	907	12 - 8	847- 907			+15.0 +10.5	Sept. 1956 Dec. 1961	O	Test hole 1,440 ft; drill-stem tests made; C.
- 24	La. State Penal Farm	W. M. Eberhart & Son	1952	Z3	46	907	4	847- 907	30	1961			P	C.

T. 2 S., R. 6 E.

SL- 176	Mrs. Loretta Canal	Acme Drilling Co.	1956	Z2	42	425	2½- 2	415- 425					D	Test hole to 600 ft.

T. 2 S., R. 7 E.

PC- 5	Frank Satterwhite	F. K. McDermott	1940	Z2	40	430	2	410- 430	2	1940	+ 7	1940	D, S	Water level reported below land surface, 1961; C.
- 58	Noah Haynes	Amy Drilling Co.	1956	Z3	38	805	2	785- 805			+23 +13	May 1956 Sept. 1964	D, S	C.
- 74	Lawrence Lambert	D. K. Summers	1960	Z3	36	843	2	828- 843	15	Sept. 1960	+10.2	Oct. 1963	S	C.
- 75	E. A. Pierre	D. K. Summers	1960	Z3	36	787	2	772- 787	20	Sept. 1960	+11	Sept. 1960	S	

T. 2 S., R. 8 E.

PC - 3	St. Stephen's Church	F. K. McDermott	1940	Z2	39	440±	2	420-440±			+ 8	1940	N	
- 44	Pointe Coupee Parish School Board (Innis School)	D. K. Summers	1940	Z3	42	1,325	4 - 3	1,305-1,325			+18 +11.8	1942 Jan. 1961	N	C.
- 62	Pointe Coupee Parish School Board (Innis School)	D. K. Summers	1956	Z3	42	1,031	4	991-1,031	160	Aug. 1956	+23	Aug. 1956	P	Test hole to 1,462 ft; drill-stem test; C.
- 73	J. A. Purpera	D. K. Summers	1960	Z2	44	544	2	524- 544			+18 + 9.5	June 1960 Oct. 1963	D	
- 90	Lawrence Lambert	D. K. Summers	1957	Z3	43	1,050	2½	1,020-1,050			+23 +13.2	June 1957 Oct. 1963	D	
- 91	Lawrence Lambert	F. K. McDermott	1948	Z2	43	545	2	527- 545					S	C.

TABLE 2. RECORDS OF SELECTED WELLS IN AND AROUND POINTE COUPEE PARISH, LOUISIANA—CONTINUED

Well No.	Owner	Driller	Year completed	Aquifer	Altitude	Depth (feet)	Diameter (inches)	Screened interval(s) (feet)	Yield (gpm)	Date of measurement	Water level(s) (feet above or below lsd)	Date of measurement	Use	Remarks
T. 3 S., R. 7 E.														
PC- 39	C. Flint	F. K. McDermott.	1951	Z1	41	460	2				− 3	1951	D	C.
											−18.8	Jan. 1961		
-49	U.S. Geological Survey	Amy Drilling Co.	1955	A	36	137	4	132– 137			− .6	Mar. 1962	O	Test hole to 1,623 ft.
											−29.0	Nov. 1964		
SL- 175	Carol Hennigan	Amy Drilling Co.	1956	Z1	35	403	2						D	C.
T. 3 S., R. 8 E.														
PC- 1	U.S. Army Corps of Engineers	F. K. McDermott.	1950	Z2	32	588	6 – 2	567– 588	12	July 1950			N	
-50	U.S. Army Corps of Engineers	D. K. Summers	1955	Z2	30	553	6	533– 553			+30	April 1955	P	C.
-68	Frank Trammell	D. K. Summers	1959	Z2	25	615	1½	595– 615			+11.6	Mar. 1961	D	C.
-105	Ovide Lacour	D. K. Summers		Z2	40	700+	2						P	C.
-106	Ovide Lacour	D. K. Summers		Z2	37	748	2½				+15.6	Oct. 1963	S	
-115	Ovide Lacour	D. K. Summers	1954	A	38	202	2						S	
T. 3 S., R. 9 E.														
PC- 46	Ovide Lacour	D. K. Summers	1954	Z2	42	750	2	730– 750			+14.6	Oct. 1963	D	Test hole to 1,933 ft.
-108	Ovide Lacour	Summers Brothers Drilling Co.	1963	Z2	42	756	2	726– 756					D	

T. 3 S., R. 3 W.

WF- 34	Town of St. Francisville	D. K. Summers	1941	Z3	150	1,781	8 - 4	1,701-1,781	p, 250 p, 75	Sept. 1941 Feb. 1961	−22 −60.4	Sept. 1941 Feb. 1961	P	Specific capacities: 23 at 250 gpm; 12.1 at 75 gpm; C.
-222	Town of St. Francisville	D. K. Summers	1961	Z3	140	1,526	12 - 8	1,446-1,526	p, 805	Aug. 1961	−62.3	Aug. 1961	P	Specific capacity 27.6 at 805 gpm; C.

T. 4 S., R. 7 E.

PC- 94	John B. Cooper	Bihm Water Well Service	1961	A	28.1	133	2				−22.9	July 1963	S	
SL- 4	Town of Melville	I. B. White	1930	Z2	35	974	16 -10	744- 785 873- 894 951- 974	p, 450				P	C.

T. 4 S., R. 8 E.

PC - 32	M. LeBlanc	D. K. Summers	1939	Z2	30	1,338	3	1,320–1,338			+19.1	Oct. 1963	D	
- 33A	J. B. Guidry	D. K. Summers	1939	Z2	30	1,518		1,498–1,518			+39	July 1939	D	Well deepened; see PC-33B
- 33B	J. B. Guidry	D. K. Summers	1939	Z3	30	1,930	3	1,906–1,930			+76 +57.5	Sept. 1939 Feb. 1961	D	C.
- 85	Bright Morning Star Church	D. K. Summers	1962	Z3	32	1,858	2 - 1½	1,828–1,858			+38.3	Oct. 1963	P	Test hole to 2,147 ft.
-136	Triple E Farm	Stamm-Scheele, Inc.	1963	A	19	194	18 -12	129- 192	p, 2,000	1964	− 9	May 1963	Ir	
-137	Triple E Farm	Stamm-Scheele, Inc.	1963	A	19	214	18 -12	149- 212	p, 1,800	1964	− 9	May 1963	Ir	

T. 4 S., R. 9 E.

PC - 42	A. A. Thibaut	F. K. McDermott	1951	Z2	36	1,090	2	1,070–1,090	50	July 1951	+35	July 1951	D, S	
- 69	Village of Morganza	D. K. Summers	1947	"2,800-ft"	34	1,872	4	1,812–1,872			+68	Aug. 1947	P	C.
-114	Pointe Coupee Parish School Board (Labarre School)	D. K. Summers	1958	"2,800-ft"	32	1,910	2	1,870–1,910			+69	July 1958	P	

TABLE 2. RECORDS OF SELECTED WELLS IN AND AROUND POINTE COUPEE PARISH, LOUISIANA—CONTINUED

Well No.	Owner	Driller	Year completed	Aquifer	Altitude	Depth (feet)	Diameter (inches)	Screened interval(s) (feet)	Yield (gpm)	Date of measurement	Water level(s) (feet above or below lsd)	Date of measurement	Use	Remarks
T. 4 S., R. 10 E.														
PC- 9	Town of New Roads	W. M. Eberhart & Son	1919	"2,800-ft"	30	1,756	4	1,696–1,756	290	Oct. 1942	+115 +90	Apr. 1919 Mar. 1942	P	C.
-38	Mr. Labutut	D. K. Summers	1947	"2,800-ft"	33	1,731	2 – 2½	1,691–1,731	45	Sept. 1947	+75 +44.8	Sept. 1947 Oct. 1963	I	C.
-48	Town of New Roads	W. M. Eberhart & Son	1949	"2,800-ft"	30	1,756	6	.....	600	1949	.....	.....	P	
-65	Town of New Roads	W. M. Eberhart & Son	1957	"2,800-ft"	34	2,045	8 –12	1,964–2,045	980 p, 2,075	Aug. 1957 Aug. 1957	+65.9	Aug. 1957	P	Specific capacity 25.6 at 980 gpm; C.
-119	Bergeron Water Co.	D. K. Summers	1947	"2,800-ft"	32	1,804	4	.....	.....	.....	.....	.....	P	C.
-122	Henry Mougeot	D. K. Summers	1948	"2,800-ft"	34	1,805	3 – 4	1,745–1,805	.....	.....	.....	.....	P	C.
-123	Antoine Langlois	D. K. Summers	1947	"2,800-ft"	34	1,804	3	1,762–1,804	200	Dec. 1947	+70 +37.3	Dec. 1947 Dec. 1964	D, S	C.
-131	Henry Mougeot	D. K. Summers	1956	"2,800-ft"	32	1,822	2½	1,782–1,822	.....	.....	+62 +41.2	Aug. 1956 Sept. 1964	P	C.
T. 4 S., R. 11 E.														
PC- 43	R. E. Callicott	D. K. Summers	1951	"2,800-ft"	36	1,610	3	1,569–1,610	125	June 1951	+72 +38.2	June 1951 Oct. 1963	D, S	C.
-59	Henry Mougeot	D. K. Summers	1956	"2,400-ft"	37	1,650	2	1,610–1,650	.....	.....	+62 +33.5	July 1956 Feb. 1961	P	C.

T. 4 S., R. 2 W.

WF -215	Crown-Zellerbach Corp.	W. M. Eberhart & Son	1960	"2,800-ft"	70	2,068	18 -9-5/8	2,003–2,068	p, 915	Feb. 1961	+12.9	Feb. 1961	I	Specific capacity 29.1 at 420 gpm; C.

T. 5 S., R. 7 E.

SL- 166	Midway Water Works Co.	D. K. Summers	1954	Z3	25	1,862	3	1,832–1,862	150	Dec. 1954	+58.6	Dec. 1954	P	C.

T. 5 S., R. 8 E.

PC- 13	Pointe Coupee Parish School Board (Fordoche School)	W. M. Eberhart & Son	1932	"1,500-ft"	26	1,116	4	1,076–1,116	120	Oct. 1932	+22	Jan. 1956	P	C.
-41	R. E. Callicott	D. K. Summers	1940	Z3	28	1,700±	4				+69	1940	D, S	C.
											+30.0	Nov. 1961		
-54	Fordoche Water Works	D. K. Summers	1951	"2,000-ft"	27	1,470	4	1,410–1,430	60	Jan. 1956	+40.0	Jan. 1956	P	Specific capacity 2.5 at 60 gpm.
								1,450–1,470			+18.4	Nov. 1961		
-55	Sam Cashio	Amy Drilling Co.	1956	"1,700-ft"	27	1,142	2	1,100–1,142	20	Mar. 1956	+31	Mar. 1956	D	C.
											+18.4	Oct. 1963		
-57	Willie Gros	Amy Drilling Co.	1956	"1,200-ft"	27	951	2	923– 951					D	
-77	Atchafalaya Levee Board	D. K. Summers	1959	Z2	32	1,145	3	1,125–1,145			+23	Sept. 1959	P	
-89	E. B. Settoon	D. K. Summers	1946	Z3	26	1,948		1,928–1,948			+35.3	Nov. 1961	D, S	
-103	R. E. Callicott			A	25.3	130	2				− 4.9	May 1964	S, O	
											−20.5	Dec. 1963		

T. 5 S., R. 9 E.

PC- 53	Texas Oil Co.	Texas Oil Co.	1956	"2,000-ft"	19	1,475	6	1,410–1,470	28	Jan. 1956	+33.4	Jan. 1956	I	Recompleted oil-test well with 6-in screen set inside perforated 8-in casing; specific capacity 1.6 at 226 gpm; C.
									p, 226	Jan. 1956	+25.6	Nov. 1961		
-56	Texas Oil Co.	Amy Drilling Co.	1956	"600-ft"	19	432	6				−25	Mar. 1956	I	C.
-92	E. Merrick	F. K. McDermott	1947	A	29.9	76	1½				− 8.8	May 1964	N, O	
											−17.8	Dec. 1963		
-109	E. Merrick		1920	A	24.3	50	2 – 1½				− 1.8	May 1964	N, O	
											−13.4	Dec. 1963		

TABLE 2. RECORDS OF SELECTED WELLS IN AND AROUND POINTE COUPEE PARISH, LOUISIANA—CONTINUED

Well No.	Owner	Driller	Year completed	Aquifer	Altitude	Depth (feet)	Diameter (inches)	Screened interval(s) (feet)	Yield (gpm)	Date of measurement	Water level(s) (feet above or below lsd)	Date of measurement	Use	Remarks
T. 5 S., R. 10 E.														
PC- 20A	E. Merrick	W. M. Eberhart & Son	1932	"2,000-ft"	36	1,302	8 - 6	1,240–1,302	350	1932	+39	1932	D, S	Well deepened; see PC- 20B.
-20B	E. Merrick	D. K. Summers	1937	"2,800-ft"	36	1,915	8 - 4	1,855–1,915	600	Jan. 1937	+85	Jan. 1937	D, S	C.
-27	J. P. Guidroz	D. K. Summers	1956	"2,800-ft"	36	1,782	2	1,737–1,782			+43.8	Oct. 1963	P	C.
-31	David and Olinde	D. K. Summers	1945	"2,000-ft"	31	1,449		1,429–1,449			+70	Feb. 1945	D	
											+ 8.6	Dec. 1964		
-63	Paul Jarreau	D. K. Summers	1956	"2,000-ft"	30	1,520	2	1,500–1,520					D	
-86	J. E. Jumonville	Circle Drilling Co.	1961		30		$10\frac{3}{4}$							Abandoned oil-test hole.
-93	Anchor Inn	D. K. Summers	1963	"2,800-ft"	30	2,071	2		68	July 1963	+56.8	Oct. 1963	P	C.
-97	U.S. Geological Survey	U.S. Geological Survey	1963	A	36.4	45	$1\frac{1}{4}$	41- 44			- 8.3	Mar. 1964	O	
											−13.7	Nov. 1963		
-98	U.S. Geological Survey	U.S. Geological Survey	1963	A	33.8	35	$1\frac{1}{4}$	31- 34			−14.1	Mar. 1965	O	C.
											−19.8	Dec. 1963		
-99	J. P. Guidroz	D. K. Summers	1949	"2,000-ft"	35	1,445	4	1,403–1,445					P	
-100	J. P. Guidroz	D. K. Summers	1959	"2,000-ft"	33	1,465	2				+13.2	Oct. 1963	P	
-101	J. P. Guidroz	D. K. Summers	1961	"2,800-ft"	33	2,150	3	2,120–2,150			+47.2	Oct. 1963	P	C.
-102	J. P. Guidroz	D. K. Summers	1960	"2,800-ft"	33	2,145	3	2,115–2,145			+42.8	Oct. 1963	P	C.
-110	J. E. Jumonville	D. K. Summers	1962	"2,800-ft"	30	2,208	8-5/8		500	May 1965	+47.7	May 1965	S	Recompleted oil-test well; specific capacity 11.5 at 500 gpm; C.
-112	Henry Mougeot	D. K. Summers	1950	"2,000-ft"	36	1,537	$2\frac{1}{2}$	1,497–1,537			+55	Mar. 1950	P	C.
											+ 9.0	Dec. 1964		
-113	La. Dept. of Highways	D. K. Summers	1955	"2,000-ft"	33	1,465	2	1,445–1,465			+46	Feb. 1955	I	
											+13	1962		
-121	Clarence Thibaut, Jr.	Summers Brothers Drilling Co.	1964	"2,800-ft"	36	2,115	4 —2	2,085–2,115	40	May 1964	+49.1	May 1964	D, S	C.
-125	M. Schustz	D. K. Summers	1959	"2,000-ft"	36	1,455	2	1,425–1,455			+28	Sept. 1959	P	

T. 5 S., R. 11 E.

PC - 8	John McDuffe....	F. K. McDermott.	1941	Z1	31	502	2½– 2	487– 502	.....	.....	+ 6	Jan. 1941	N	
-17	Alma Plantation ..	W. M. Eberhart & Son.....	1919	"1,700-ft"	33	1,286	8 – 6	1,206–1,286	220 150	June 1919 Mar. 1942	+92	June 1919	I	C.
-19	Alma Plantation ..	W. M. Eberhart & Son.....	1963	A	33	322	18 –12	221– 321	p, 3,000	July 1963	–20	July 1963	I	Specific capacity 75 at 3,000 gpm.
-21	Alma Plantation ..	W. M. Eberhart & Son.....	1936	A	33	360	12 – 8	.....	p, 3,000	.....	.....	.....	I	C.
-66	Mrs. S. Hines.....	D. K. Summers...	1958	"2,000-ft"	33	1,530	4	1,490–1,530	.....	.....	+20.1	Feb. 1961	D	C.
-79	Pointe Coupee Parish School Board (Alma School).....	D. K. Summers...	1958	"2,400-ft"	31	2,032	2	1,992–2,032	.....	.....	+58 +33.4	Aug. 1958 Oct. 1963	P	C.
-80	Henry Mougeot...	D. K. Summers...	1960	"2,000-ft"	35	1,366	2½– 2	1,336–1,366	.....	.....	+25	Feb. 1960	P	
-81	Robert Cline.....	Amy Drilling Co. .	1962	"2,800-ft"	33	2,101	2½	2,071–2,101	95	July 1962	+48.0	Oct. 1963	D	C.
-83	Wilsey Olinde.....	Amy Drilling Co. .	1962	"2,800-ft"	36	1,950	2	1,919–1,950	.....	.....	+29.1	Oct. 1963	D	C.
-111	Henry Mougeot...	D. K. Summers...	1950	"2,000-ft"	36	1,518	4 – 2½	1,478–1,518	.....	.....	+57	Apr. 1950	P	
-129	Pointe Coupee Parish School Board (Rougon School).....	Amy Drilling Co. .	1960	"2,400-ft"	36	1,929	2½	1,889–1,929	.....	.....	.....	.....	P	C.

T. 6 S., R. 7 E.

PC- 51	E. A. Courtney ...	Amy Drilling Co..	1955	"1,200-ft"	20	1,111	3	1,081–1,111	20 p, 30	Oct. 1955 Nov. 1962	+ 5	Oct. 1955	D	Specific capacity 1 at 30 gpm; C.
SL- 6A	Village of Krotz Springs.....	D. K. Summers...	1940	"1,500-ft"	25	1,667	4	1,627–1,667	.....	.....	+50	May 1940	P	Well deepened; see SL-6B; C.
- 6B	Village of Krotz Springs.....	D. K. Summers...	1956	"2,000-ft"	25	1,880	3	.....	37	Mar. 1963	+20.7	Mar. 1963	P	Specific capacity 3.8 at 37 gpm; C.
-169	Gulf Refining Co..	Unknown.....	.....	A	20	150	4	.....	.....	.....	– 7.4	Feb. 1955	N	C.
-197	Village of Krotz Springs.....	Layne-Louisiana Inc.....	1961	"1,200-ft"	25	1,078	13-3/8-–8-5/8	981–1,076	p, 500	.....	– 8.1	Nov. 1962	P	Gravel walled around screen; C.

TABLE 2. RECORDS OF SELECTED WELLS IN AND AROUND POINTE COUPEE PARISH, LOUISIANA—CONTINUED

Well No.	Owner	Driller	Year completed	Aquifer	Altitude	Depth (feet)	Diameter (inches)	Screened interval(s) (feet)	Yield (gpm)	Date of measurement	Water level(s) (feet above or below lsd)	Date of measurement	Use	Remarks
T. 6 S., R. 8 E.														
PC- 15	Pointe Coupee Parish School Board (Lottie community)	D. K. Summers	1941	"1,700-ft"	25	1,472	3	1,432–1,472	150	Aug. 1941	+55	Aug. 1941	P	C.
									55	Oct. 1962	+21.7	Oct. 1962		
-25	J. W. Greene	D. K. Summers	1948	"2,400-ft"	20	2,105	3 -2½	2,055–2,105	75	Feb. 1948	+76	Feb. 1948	S	Very high color; C.
									50	Nov. 1962	+54.1	Nov. 1962		
-29	R. O. Long	D. K. Summers	1941	"1,200-ft"	21	1,053	2	1,024–1,044			+37	Aug. 1941	D	
-72	Stuckey's Pecan Shoppe	D. K. Summers	1960	"1,200-ft"	22	1,046	2½- 2	1,026–1,046			+ .5	June 1960	P	C.
											− 2.7	Dec. 1962		
-76	L. E. Carpenter	D. K. Summers	1961	"2,000-ft"	26	1,712	2	1,692–1,712			+26.5	Oct. 1963	D, S	C.
-84	E. L. Greene	D. K. Summers	1955	"1,700-ft"	24	1,302	3	1,272–1,302			+14.7	Oct. 1963	D, S	C.
-117	W. J. Mouton	Summers Brothers Drilling Co.	1963	"1,700-ft"	23	1,364	4 -2-7/8	1,324–1,364	100	Dec. 1963	+23	Dec. 1963	S	C.
-118	W. J. Mouton	Summers Brothers Drilling Co.	1963	"1,700-ft"	26	1,348	3	1,318–1,348			+23	Jan. 1964	S	
T. 6 S., R. 9 E.														
PC- 40	R. E. Callicott	D. K. Summers	1948	"2,000-ft"	20	1,700	3½				+28.0	Sept. 1963	D, S	C.
-47	J. W. Freneaux	D. K. Summers	1954	"2,000-ft"	25	1,474	2	1,449–1,469			+50	Aug. 1954	D	C.
											+32.6	Feb. 1961		
-61	H. P. Glazier	D. K. Summers	1953	"2,400-ft"	25	2,185	4 - 3	2,142–2,183			+74	Oct. 1953	D, S	C.
											+54.6	Nov. 1963		
-67	Pointe Coupee Parish School Board (Valverda School)	Amy Drilling Co.	1958	"2,000-ft"	27	1,750	2	1,710–1,750			+23.4	Sept. 1963	P	
-70	T. H. Glazier	D. K. Summers	1960	"2,800-ft"	26	2,294	4 - 3	2,259–2,294	150	May 1960	+73.9	May 1960	P	C.
											+59.2	May 1964		
-87	Mr. Andre	D. K. Summers	1957	"2,000-ft"	21	1,720	2½	1,700–1,720			+51	May 1957	D, S	

-88	A. N. Smith	D. K. Summers	1953	"2,000-ft"	21	1,713	4 - 2	1,671–1,713			+27.8	Oct. 1963	D	
-132	Pointe Coupee Parish School Board (Livonia High School)	D. K. Summers	1952	"2,000-ft"	25	1,690	4	1,648–1,690			+19.5 +48.9	Apr. 1965 Oct. 1964	P D	
-133	Mack Wilson	D. B. McClinton	1964	"2,400-ft"	26	2,046	4 - 2							Water has bad taste and odor; C.
-135	F. R. Lejeune	D. K. Summers	1964	"2,400-ft"	26	2,165	4	2,125–2,165	75	Nov. 1964	+53.2	Dec. 1964	P	
-138	P. L. Riviere	D. K. Summers	1960	"2,000-ft"	27	1,637	2½	1,617–1,637			+37 +20.1	Apr. 1960 Apr. 1965	P	

T. 6 S., R. 10 E.

PC- 45	Paul Jarreau	D. K. Summers	1954	"1,700-ft"	19	1,419	2	1,399–1,419			+53.0	Oct. 1954	D	C.
-60	H. M. Kimball	D. K. Summers	1956	"2,800-ft"	19	2,343	4	2,293–2,343			+74 +49.8	July 1956 Sept. 1963	D, S	C.
-78	B. M. Fairchild	D. K. Summers	1961	"2,400-ft"	26	2,027	2	2,007–2,027			+41.3	Oct. 1963	D, S	C.
-82	Eustis DeCuir	Amy Drilling Co.	1962	"2,000-ft"	25	1,595	2				+21.7	Oct. 1963	D, S	
-120	Frank Lewis	Summers Brothers Drilling Co.	1964	"1,200-ft"	27	760	2	750- 760			−22	Feb. 1964	D	C.
-126	Nick Cicero	D. K. Summers	1956	"2,000-ft"	24	1,477	2	1,447–1,477			+30	Jan. 1964	D, S	C.
-130	A. A. Freneaux	D. K. Summers	1957	"2,000-ft"	21	1,648	2	1,628–1,648			+50	Mar. 1957	D	
WBR-29	W. H. Balis	D. K. Summers	1950	"1,500-ft"	20	1,184	2	1,164–1,184			+37 + 3	Sept. 1950 June 1956	P	C.
-69	J. J. Salter	D. K. Summers	1948	"1,500-ft"	23	1,343	4	1,293–1,343			+56	1948	P	
-78	D. L. Robertson	D. K. Summers	1944	"1,700-ft"	27	1,395	2	1,373–1,395					D, S	

T. 6 S., R. 11 E.

PC - 52	Robert Comeaux	Amy Drilling Co.	1955	"1,700-ft"	26	1,356	2½	1,330–1,356			+46 +21.0	Oct. 1955 Feb. 1961	D	C.

T. 7 S., R. 9 E.

Ib -29	Town of Maringouin	D. K. Summers	1951	"2,000-ft"	18	1,964	6	1,880–1,964	610	Dec. 1951	+59.8 +43	Dec. 1951 Feb. 1960	P	C.

TABLE 3. CHEMICAL ANALYSES OF WATER FROM SELECTED WELLS IN OR AROUND POINTE COUPEE PARISH, LA.

Aquifer: A, Alluvial aquifer; Z1, Z2, or Z3—hydraulic zones; "2,000-ft" (specific correlative unit of the Baton Rouge area aquifers, such as the "2,000-foot" sand). Analyses by the USGS unless otherwise indicated. Wells are located on plate 1, and are described in table 2.

Well No.	Depth (feet)	Aquifer	Date of collection	Constituents, in parts per million																	Specific conductance (micromhos at 25°C)	Color	pH	Temperature °F	Remarks
				Silica (SiO_2)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Phosphate (PO_4)	Dissolved solids	Hardness as $CaCO_3$					
T. 1 S., R. 6 E.																									
Av - 37	398	Z2	2/ 1/55	23	0.02	0.10	11	0.5	164	1.4	0	296	0.7	100	0.5	1.0	0.28	0.43	452	30	767	15	7.8	70	
T. 1 S., R. 7 E.																									
PC - 11	442	Z2	1940	....	0.00	.....	.....	.....	....	.....	.....	....	.....	.....	....	....	.....	....	360	....	.....	.....	8.2	....	Analysis by La. State Board of Health.
- 11	442	Z2	3/ 3/42	....	.....	.....	.....	.....	....	.....	.....	182	4	4	0.0	....	.....	....	.....	....	.....	.....	.....	....	
- 11	442	Z2	2/ 3/61	....	.....	.....	.....	.....	....	.....	.....	....	.....	6.4	....	....	.....	....	.....	18	352	.....	....	74	
T. 1 S., R. 8 E.																									
PC -107	400±	Z2	4/14/64	42	1.4	0.04	28	3.7	27	3.5	0	160	10	2.4	0.1	0.2	0.00	0.01	196	85	275	5	7.2	68	
T. 1 S., R. 5 W.																									
WF- 22	907	Z3	3/17/52	20	0.6	.....	9.9	1.9	50	.....	0	151	4.4	8.0	....	....	.....	....	267	33	.....	.....	.....	....	Analysis by Curtis Lab.
- 22	990	Z3	10/28/51	27	1.5	.....	.....	.....	....	.....	.....	206	.....	16	....	....	.....	....	.....	4	381	.....	8.1	....	Drill-stem test.
- 22	1,074	Z3	10/28/51	22	1.8	.....	.....	.....	....	.....	.....	212	.....	1,100	....	....	.....	....	.....	70	3,820	.....	7.3	....	Drill-stem test.
- 22	1,440	Z3	10/28/51	19	5.6	.....	.....	.....	....	.....	.....	344	.....	3,650	....	....	.....	....	.....	280	11,300	.....	8.2	....	Drill-stem test.
- 24	907	Z3	8/17/56	42	.44	0.00	16	2.5	176	2.6	0	170	7.1	200	0.1	0.0	0.09	0.4	531	50	923	5	7.6	74	

T. 2 S., R. 7 E.

PC- 5	430	Z2	11/ 3/61	....	.....	.....	.....	.....	...	.....	.....	...	.....	.....	40	.....	...	.....	.....	.....	26	481	.....	....	65	
- 58	805	Z3	10/18/61	28	0.12	0.04	5.9	0.1	72	1.7	0	191	3.8	10	0.4	0.0	0.16	0.3	239	15	342	10	7.0	74	
- 74	843	Z3	10/ 2/63	26	.35	.02	1.6	1.5	80	1.3	0	196	9.6	6.0	.5	.1	.00	.05	252	10	328	5	7.7	69	

T. 2 S., R. 8 E.

PC - 44	1,325	Z3	2/ 1/54	22	0.18	0.01	1.0	0.5	223	1.1	0	236	0.3	212	0.2	1.0	0.11	0.83	579	4	1,050	10	7.7	74	Field pH 8.3.
- 62	1,031	Z3	2/16/60	21	.07	.01	2.0	.2	98	1.5	12	221	9.0	5.8	.7	1.5	.13	.8	261	6	410	20	8.7	77	Field pH 8.9.
- 62	1,450	Z3	8/30/56	....	.....	.....	.....	.....	....	.....	.....	...	.....	4,900	....	....	.....	.....	.....	...	.....	.....	.....	....	Drill-stem test.	
- 91	545	Z2	7/ 5/63	....	.....	.....	.....	.....	....	.....	.....	...	.....	10	....	....	.....	.....	.....	20	.....	.....	.....	73		

T. 3 S., R. 7 E.

PC - 39	460	Z1	11/12/64	33	0.10	0.04	9.8	2.3	55	1.6	0	170	5.6	4.3	0.2	0.1	0.02	0.49	200	34	278	5	7.2	71	Field pH 7.3.
SL -175	403	Z1	3/ 1/56	....	.....	.....	.....	.....	....	.....	.....	...	.....	420	....	....	.....	.....	.....	...	.....	.....	.....	68		

T. 3 S., R. 8 E.

PC - 50	553	Z2	11/ 3/61	14	0.44	0.00	2.1	0.2	71	0.5	0	183	7.0	4.0	0.3	0.0	0.38	0.6	204	6	311	20	7.5	68	
- 68	615	Z2	2/ 3/61	....	.....	.....	.....	.....	....	.....	.....	...	.....	5.1	....	....	.....	.....	.....	8	255	.....	.....	67	
-105	700±	Z2	9/27/48	....	.3	.....	.....	.....	....	.....	0	151	.....	9	....	....	.....	....	176	67	.....	17	7.4	....	Analysis by La. State Board of Health.	

T. 3 S., R. 3 W.

WF- 34	1,781	Z3	5/29/57	27	0.05	0.01	1.7	0.2	71	0.6	6	162	9.4	4.8	0.2	0.0	0.07	0.5	201	5	298	0	8.7	85	Field pH 9.1.
-222	1,526	Z3	9/10/64	19	.03	.02	1.5	.3	101	.7	0	256	7.4	2.6	.4	.2	.12	1.2	265	5	414	20	8.0	82	

T. 4 S., R. 7 E.

SL - 4	974	Z2	1/31/55	22	0.01	0.00	0.8	0.2	99	0.5	5	235	9.1	4.5	0.7	1.0	0.19	1.2	262	3	404	10	8.5	77	H_2S odor.

TABLE 3. CHEMICAL ANALYSES OF WATER FROM SELECTED WELLS IN OR AROUND POINTE COUPEE PARISH, LA.—CONTINUED

Well No.	Depth (feet)	Aquifer	Date of collection	Constituents, in parts per million																	Specific conductance (micromhos at 25° C)	Color	pH	Temperature °F	Remarks
				Silica (SiO_2)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Phosphate (PO_4)	Dissolved solids	Hardness as $CaCO_3$					
T. 4 S., R. 8 E.																									
PC-33B	1,930	Z3	5/14/65	....	.....	.....	.....	.....	....	.....	.....	....	.....	57	....	....	.....	....	.....	6	747	.....	8.6	82	Slight yellow color.
T. 4 S., R. 9 E.																									
PC- 69	1,872	"2,800-ft"	2/ 9/60	30	0.18	0.01	0.7	0.3	97	0.8	41	154	12	6.0	0.5	0.1	0.10	0.80	264	3	409	10	9.1	88	Field pH 9.3.
T. 4 S., R. 10 E.																									
PC- 9	1,756	"2,800-ft"	12/30/54	24	0.05	0.00	1.2	0.2	182	0.8	33	406	4.7	3.5	1.1	0.2	0.22	0.87	452	4	735	30	8.9	86	
- 38	1,731	"2,800-ft"	5/ 5/64	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.9	.....	.....	.....	.....	.....	.....	50	9.1	84	
- 65	2,045	"2,800-ft"	7/21/60	10	.02	.02	2.0	.2	80	.9	0	194	12	6.9	.1	.0	.14	.3	222	6	336	5	8.2	89	
-119	1,804	"2,800-ft"	1/19/64	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.9	.....	.....	.....	.....	.....	.....	50	8.7	....	
-122	1,805	"2,800-ft"	9/11/64	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3.6	1.0	.....	.....	.....	.....	7	700	40	8.6	86	
-123	1,804	"2,800-ft"	4/29/64	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5.2	.0	.....	.....	.....	.....	4	284	5	8.2	85	
-131	1,822	"2,800-ft"	9/11/64	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.8	.....	.....	.....	.....	.....	671	40	....	83	
T. 4 S., R. 11 E.																									
PC- 43	1,610	"2,800-ft"	5/ 5/64	....	.....	.....	.....	.....	....	.....	.....	....	.....	.....	0.6	.....	.....	....	.....	.....	.....	30	9.3	82	
-59	1,650	"2,400-ft"	5/ 5/64	....	.....	.....	.....	.....	....	.....	.....	....	.....	.....	.2	.....	.....	....	.....	.....	.....	0	8.8	81	

T. 4 S., R. 2 W.

WF-215	2,068	"2,800-ft"	10/ 5/60	12	0.05	0.01	1.5	0.1	85	.....	16	173	9.1	8.0	....	....	.....	....	.....	4	343	0	8.9	....	Analysis by Curtis Lab.

T. 5 S., R. 7 E.

SL -166	1,862	Z3	12/21/54	29	0.08	0.00	0.2	0.3	129	0.4	20	281	7.3	8.2	0.7	0.0	0.17	1.0	334	2	533	40	8.8	83	H_2S odor.

T. 5 S., R. 8 E.

PC - 13	1,116	"1,500-ft"	1/23/56	18	0.03	0.02	1.2	0.0	109	0.4	18	231	12	3.0	0.7	0.2	0.28	1.1	278	3	443	5	9.0	74	
-41	1,700±	Z3	12/10/64	....	.....	.....	.....	.....	....	.....	.....	.....	.....	5.4	....	....	.....	....	.....	....	416	.....	.....	....	
-55	1,142	Z2	3/30/56	28	.06	.01	.6	.1	88	.5	0	212	12	3.0	.4	.1	.22	1.2	242	2	361	0	8.1	72	

T. 5 S., R. 9 E.

PC - 53	1,475	"2,000-ft"	1/23/56	21	0.04	0.01	1.4	0.1	94	0.3	6	216	12	3.0	0.5	0.0	0.23	0.3	245	4	381	5	8.5	81	Slight H_2S odor.
- 56	432	"600-ft"	3/30/56	50	3.0	.83	240	62	775	13	0	235	.2	1,690	.0	4.8	.21	.03	2,950	854	5,430	0	7.3	70	

T. 5 S., R. 10 E.

PC -20B	1,915	"2,800-ft"	12/30/54	26	0.15	0.00	0.6	0.2	156	0.6	30	306	6.7	24	0.7	0.0	0.17	1.0	398	2	649	30	9.0	88	
-27	1,782	"2,800-ft"	1/ 9/64	....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.7	....	.....	....	.....	....	.....	80	8.6	....	
-93	2,071	"2,800-ft"	1/ 9/64	....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.3	....	.....	....	.....	....	.....	30	8.6	....	
-98	35	A	3/19/65	29	.88	.06	126	38	29	5.4	0	592	51	15	.2	.1	.1	.0	623	470	1,010	5	7.0	68	
-101	2,150	"2,800-ft"	5/ 5/64	....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.5	....	.....	....	.....	....	.....	60	9.1	....	
-102	2,145	"2,800-ft"	5/ 5/64	....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.3	....	.....	....	.....	....	.....	15	9.1	....	
-110	2,208	"2,800-ft"	12/10/64	....	.....	.....	.....	.....	....	.....	.....	.....	.....	7.4	.3	....	.....	....	.....	10	400	15	8.7	91	Slight H_2S odor.
-112	1,537	"2,000-ft"	12/10/64	....	.....	.....	.....	.....	....	.....	.....	.....	.....	5.8	....	....	.....	....	.....	10	244	.....	.....	....	
-121	2,115	"2,800-ft"	5/ 7/64	....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.9	....	.....	....	.....	....	.....	40	....	87	

TABLE 3. CHEMICAL ANALYSES OF WATER FROM SELECTED WELLS IN OR AROUND POINTE COUPEE PARISH, LA.—CONTINUED

Well No.	Depth (feet)	Aquifer	Date of collection	Constituents, in parts per million: Silica (SiO_2)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Phosphate (PO_4)	Dissolved solids	Hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	Color	pH	Temperature °F	Remarks
T. 5 S., R. 11 E.																									
PC - 17	1,286	"1,700-ft"	3/23/42	....	.....	.....	.....	.....	.....	.....	.....	162	10	6	0.3	....	.....	.....	.....	12	.....	.....	.....	....	
-21	360	A	10/11/44	....	1.8	.....	.....	.....	.....	.....	.....	238	9	2.0	....	0.5	.....	.....	.....	120	.....	.....	6.6	....	
- 66	1,530	"2,000-ft"	11/12/64	50	.15	0.06	0.9	0.2	62	0.6	0	148	8.4	3.7	.3	.0	0.00	1.5	205	3	257	5	7.5	78	Field pH 7.3.
- 79	2,032	"2,400-ft"	5/ 5/64	22	0.3	0.2	.0	.5	131	.5	14	318	9.0	2.9	.3	.2	.32	.00	357	2	544	30	8.5	....	
- 81	2,101	"2,800-ft"	7/16/62	16	.11	.01	1.9	.1	267	1.6	18	668	.6	6.3	2.1	.7	.75	.00	668	5	1,050	100	8.5	88	Field pH 9.2.
- 83	1,950	"2,800-ft"	9/ 7/62	15	.04	.01	.6	.1	201	1.2	26	480	5.4	4.0	1.2	.4	.66	1.1	499	2	815	50	8.7	....	Field pH 8.9.
-129	1,929	"2,400-ft"	5/ 5/64	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.0	.3	....	.....	.....	.....	4	508	.....	....	....	
T. 6 S., R. 7 E.																									
PC - 51	1,111	"1,200-ft"	10/25/55	28	0.13	0.01	2.0	0.0	102	0.5	3	216	9.6	24	0.4	0.2	0.22	0.9	277	5	431	5	8.4	77	H_2S odor.
SL - 6A	1,667	"1,500-ft"	1940	....	.....	.....	.....	.....	.....	.....	.....	496	4	2	2.0	....	.....	.....	.....	5	.....	.....	.....	....	
- 6B	1,880	"2,000-ft"	11/14/62	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5.4	....	....	.....	.....	345	4	547	.....	.....	86	Methane gas 0.1 ppm.
-169	150	A	4/ 4/63	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	184	....	....	.....	.....	.....	.....	1,280	.....	.....	70	Methane gas 0.1 ppm.
-197	1,078	"1,200-ft"	11/14/62	36	.04	.00	.0	.7	79	.5	0	194	11	4.0	.4	.0	.0	.82	247	3	335	0	7.7	78	
T. 6 S., R. 8 E.																									
PC - 15	1,472	"1,700-ft"	3/ 3/42	....	.....	.....	.....	.....	.....	.....	.....	243	15	3	0.8	....	.....	.....	.....	10	.....	.....	.....	79	
- 25	2,105	"2,400-ft"	11/ 2/62	17	0.31	0.00	0.0	1.5	469	1.4	0	1220	.0	24	2.8	0.4	2.30	0.00	1,260	6	1,780	150	8.3	81	Dark straw color.
- 72	1,046	"1,200-ft"	11/ 6/62	40	.09	.20	.4	.2	68	.8	0	165	7.2	3.5	.3	.0	.00	.78	247	2	290	0	7.5	71	
- 76	1,712	"2,000-ft"	12/10/64	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.4	....	....	.....	.....	.....	8	341	.....	.....	....	
- 84	1,302	"1,700-ft"	11/13/62	30	.....	.00	76	32	31	3.6	0	426	10	31	.2	.0	.09	.08	442	322	708	5	7.5	76	
-117	1,364	"1,700-ft"	12/31/63	22	.12	.01	1.0	.1	88	1.1	2	206	13	3.2	.1	.1	.14	1.0	259	3	336	5	8.3	81	Field pH 8.9.

T. 6 S., R. 9 E.

PC - 40	1,700	"2,000-ft"	12/10/64	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3.4	.....	.....	.....	.....	.....	2	480	.....	.....	.....	
- 47	1,474	"2,000-ft"	12/10/64	41	0.08	0.00	1.1	0.3	65	0.4	0	157	8.8	4.6	0.3	0.0	0.03	0.58	210	4	273	5	7.5	72	
- 61	2,185	"2,400-ft"	11/30/53	....	.1	.....	.....	.....	.....	.....	.....	283	.....	11	.....	.....	.....	.....	323	18	.....	25	7.2	....	Analysis by La. State Board of Health.
- 61	2,185	"2,400-ft"	5/ 6/64	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.5	.....	.....	.....	.....	.....	.....	30	9.2	....	
- 70	2,294	"2,800-ft"	5/ 6/60	18	.05	.01	.0	.0	177	1.2	0	341	4.6	74	1.0	.1	.28	1.0	451	0	695	30	8.2	87	Field pH 8.9.
- 70	2,294	"2,800-ft"	9/11/64	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	91	0.6	.....	.....	.....	.....	8	767	30	.....	87	
-133	2,046	"2,400-ft"	10/ 9/64	22	0.14	0.04	0.0	0.0	177	2.5	0	443	5.8	5.6	1.3	0.4	0.63	1.6	445	0	688	80	8.2	....	Objectionable taste and odor.

T. 6 S., R. 10 E.

PC- 45	1,419	"1,700-ft"	12/21/54	30	0.05	0.01	0.2	0.2	82	0.2	9	182	9.7	3.2	0.1	0.0	0.08	1.1	225	1	341	5	8.6	74	
- 60	2,343	"2,800-ft"	5/ 5/64	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.4	.....	.....	.....	.....	.....	.....	5	9.3	....	
- 78	2,027	"2,400-ft"	12/10/64	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.8	.9	.....	.....	.....	.....	4	408	15	8.8	75	
-120	760	"1,200-ft"	3/ 6/64	46	.36	.04	14	4.1	30	2.7	0	122	9.8	4.2	.1	.1	.00	.11	158	52	239	0	6.9	....	Field pH 7.6.
-126	1,477	"2,000-ft"	11/12/64	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.8	.....	.....	.....	.....	.....	4	273	.....	7.8	79	
WBR-29	1,184	"1,500-ft"	12/10/64	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7.0	.....	.....	.....	.....	.....	.....	331	.....	.....	.....	

T. 6 S., R. 11 E.

PC - 52	1,356	"1,700-ft"	10/25/55	58	0.49	0.02	3.6	0.0	54	0.8	0	135	8.6	5.0	0.2	0.0	0.14	1.1	199	9	234	0	7.5	74	

T. 7 S., R. 9 E.

Ib - 29	1,964	"2,000-ft"	2/16/60	18	0.07	0.01	0.9	0.2	140	0.7	20	318	10	3.4	1.2	0.2	0.13	1.2	351	3	568	30	8.9	89	

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EXPLANATION

74
WATER WELL AND WELL NUMBER

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GEOLOGICAL SURVEY GAGING STATION

E
U. S. CORPS OF ENGINEERS GAGING STATION

LEVEE SYSTEM

SEE TABLE 2 FOR WELL RECORDS

SEE PLATE 2 FOR GEOLOGIC SECTIONS A-A', B-B', AND C-C'

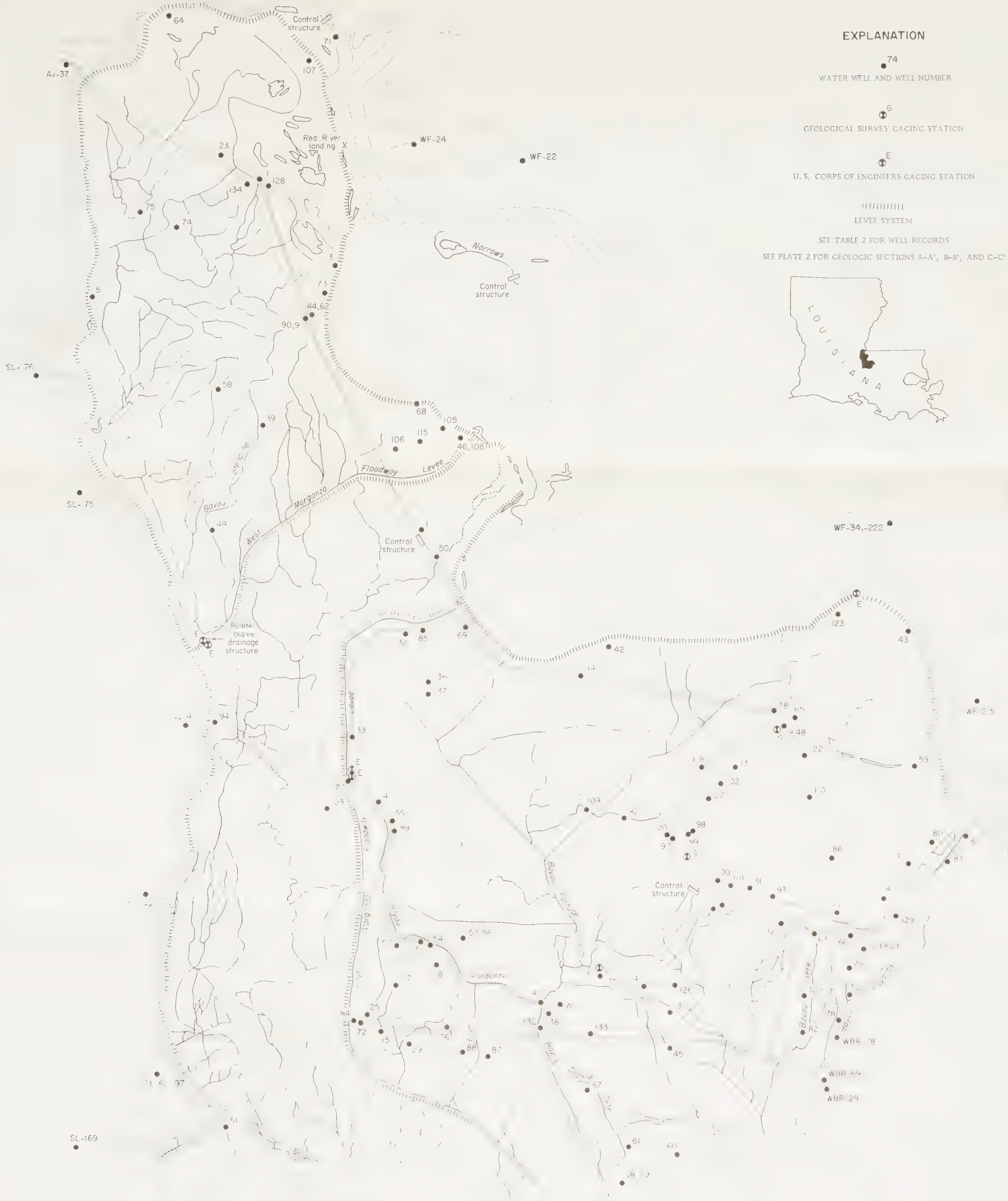

PLATE 1. DRAINAGE, LEVEE SYSTEM, AND LOCATION OF SELECTED WATER WELLS IN POINTE COUPEE PARISH, LOUISIANA, AND SELECTED WELLS IN NEIGHBORING PARISHES.

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PLATE 2. GEOLOGIC SECTIONS A-A', B-B', AND C-C' SHOWING PRINCIPAL AQUIFERS IN POINTE COUPEE PARISH, LOUISIANA.

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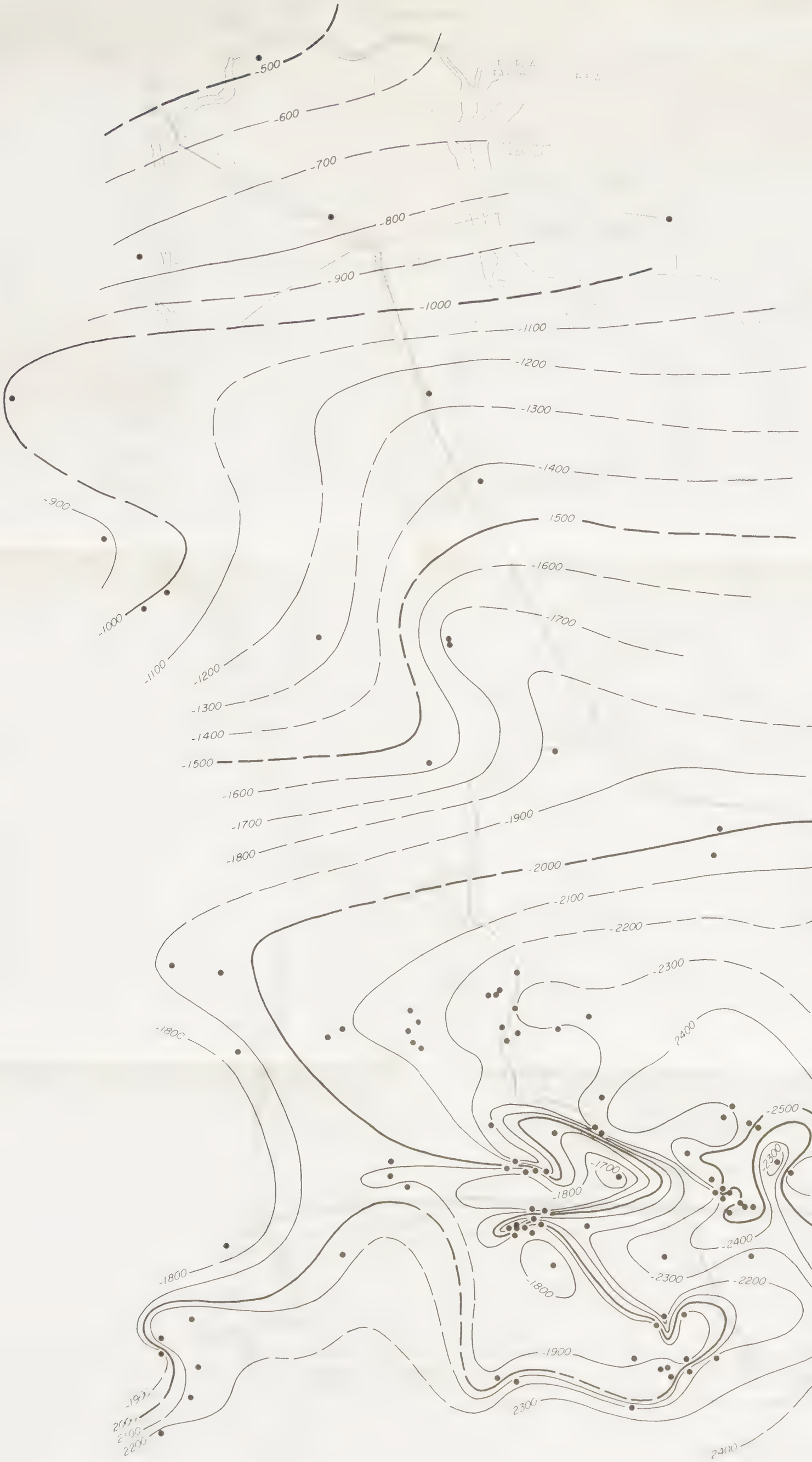

EXPLANATION

CONTROL POINT

-1000

CONTOUR SHOWING ALTITUDE OF BASE OF FRESH WATER. DASHED WHERE APPROXIMATE. CONTOUR INTERVAL 100 FEET. DATUM IS MEAN SEA LEVEL

AREA WHERE SALT WATER OCCURS ABOVE THE BASE OF FRESH WATER IN SANDS OF INTERMEDIATE DEPTH

SEE PLATE 2 FOR GEOLOGIC SECTIONS A-A', B-B', AND C-C'

PLATE 3. ALTITUDE OF THE BASE OF FRESH GROUND WATER IN POINTE COUPEE PARISH, LOUISIANA.

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EXPLANATION

CONTROL POINTS

● ELECTRICAL OR DRILLERS' LOG

○ USCE BORING (FISK, 1947 AND 1952)

-200 STRUCTURE CONTOUR

SHOWS ALTITUDE OF BASE OF ALLUVIAL AQUIFER. CONTOUR INTERVAL 50 FEET. DATUM IS MEAN SEA LEVEL

50 LINE OF EQUAL THICKNESS. INTERVAL 50 FEET

AREA WHERE BASE OF AQUIFER MAY CONTAIN SALTY WATER

SEE PLATE 2 FOR GEOLOGIC SECTIONS A-A', B-B', AND C-C'

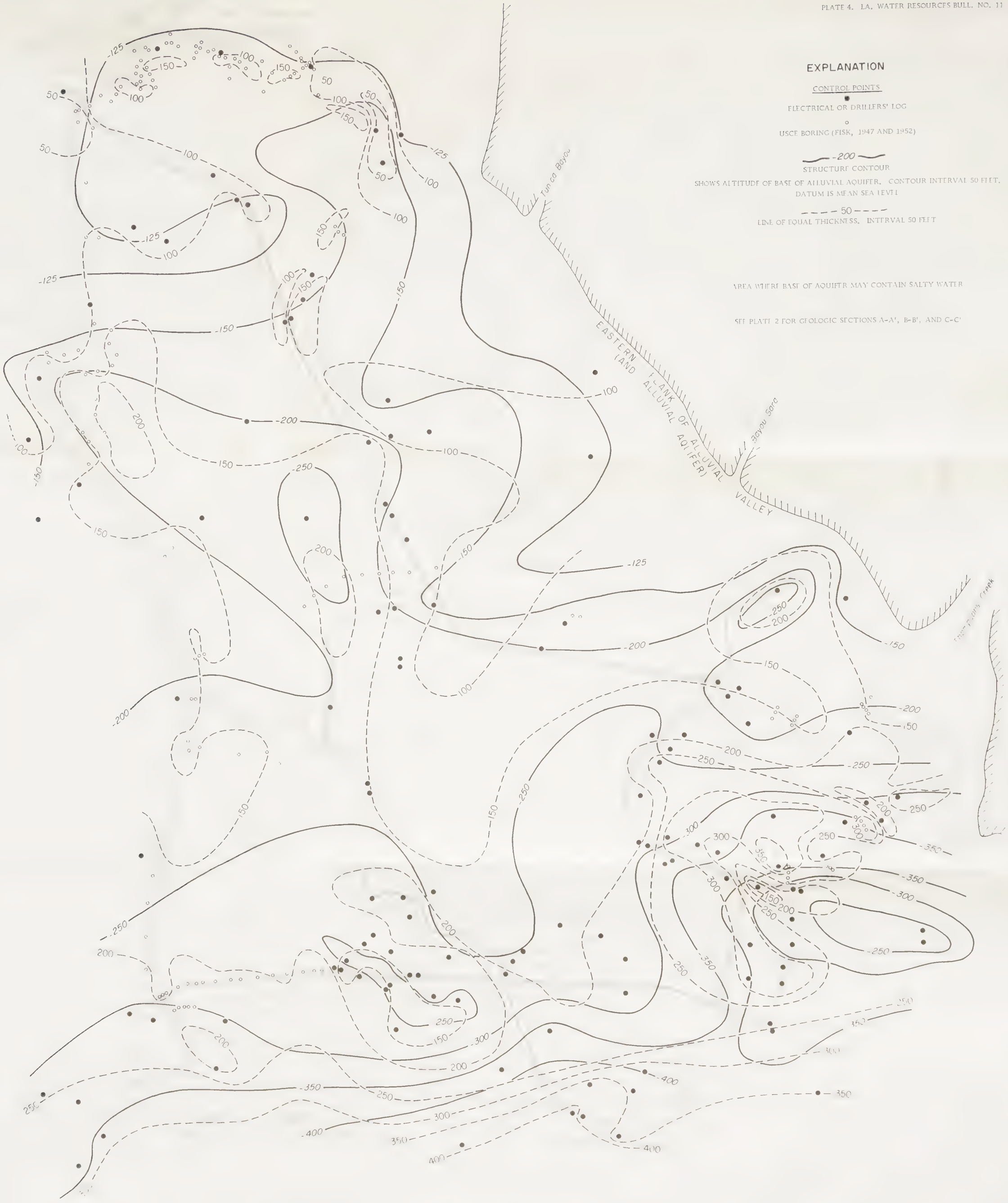

PLATE 4. THICKNESS AND ALTITUDE OF THE BASE OF THE ALLUVIAL AQUIFER IN POINTE COUPEE PARISH, LOUISIANA.

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EXPLANATION

CONTROL POINT

-1000

STRUCTURE CONTOUR
SHOWS ALTITUDE OF BASE OF "1200-FOOT" SAND. DASHED WHERE APPROXIMATE. CONTOUR INTERVAL 100 FEET. DATUM IS MEAN SEA LEVEL

100

LINE OF EQUAL THICKNESS. INTERVAL 50 FEET

AREA WHERE AQUIFER IS THIN, MISSING, OR IS INDISTINGUISHABLE FROM OVERLYING OR UNDERLYING SAND UNITS

SEE PLATE 2 FOR GEOLOGIC SECTIONS A-A', B-B', AND C-C'

PLATE 5. THICKNESS AND ALTITUDE OF THE BASE OF THE "1,200-FOOT" SAND OF ZONE 1 IN POINTE COUPEE PARISH, LOUISIANA.

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EXPLANATION

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STRUCTURE CONTOUR
SHOWS ALTITUDE OF BASE OF "1500-FOOT" SAND. DASHED WHERE APPROXIMATE.
CONTOUR INTERVAL 100 FEET. DATUM IS MEAN SEA LEVEL

100

LINE OF EQUAL THICKNESS. INTERVAL 50 FEET

AREA WHERE SALT WATER IS IN THE AQUIFER, OR IN UNDERLYING SANDS
THAT ARE IN CLOSE HYDRAULIC CONNECTION

AREA WHERE AQUIFER IS THIN, MISSING, OR IS INDISTINGUISHABLE
FROM OVERLYING OR UNDERLYING SAND UNITS

SEE PLATE 2 FOR GEOLOGIC SECTIONS A-A', B-B', AND C-C'

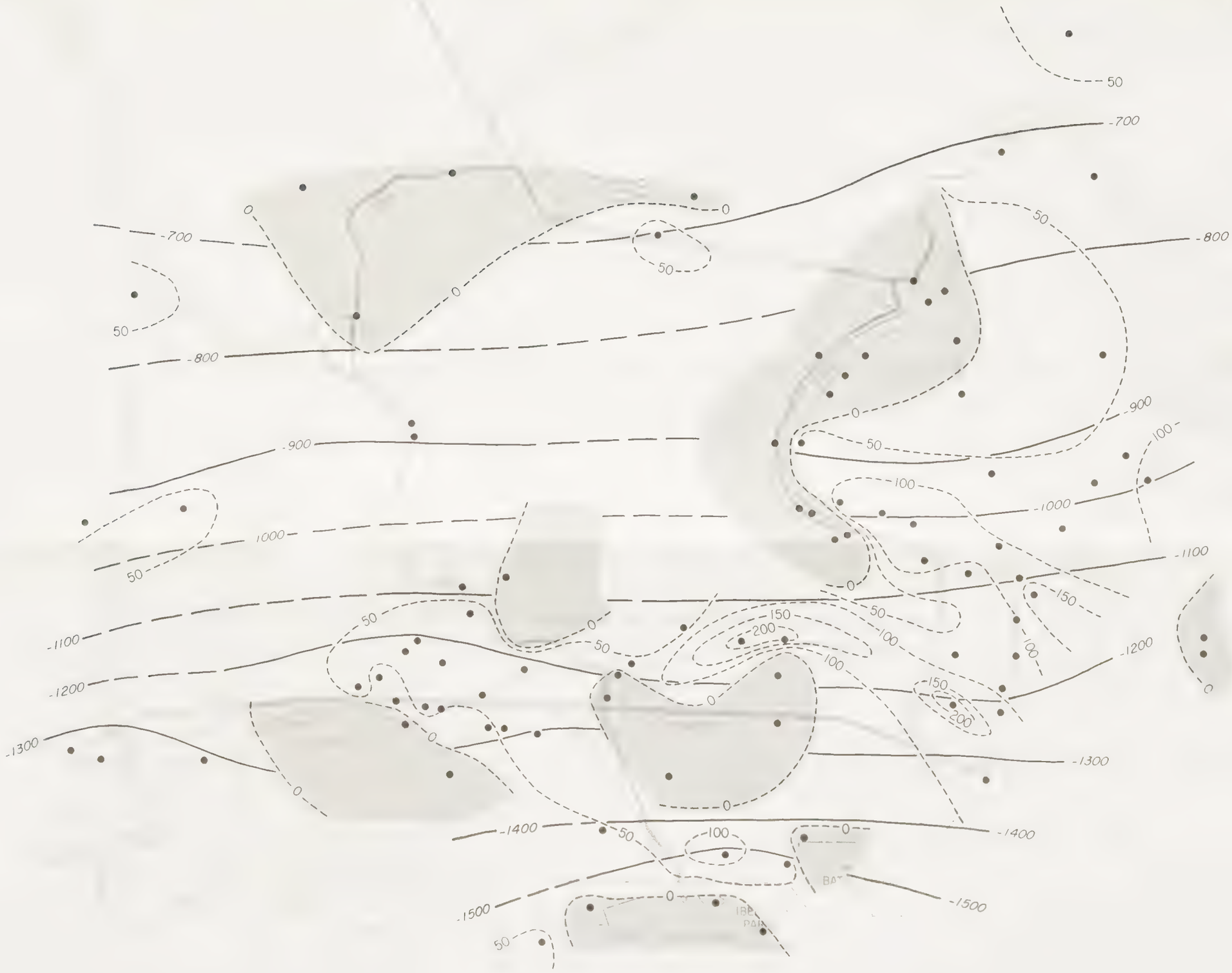

PLATE 6. THICKNESS AND ALTITUDE OF THE BASE OF THE "1,500-FOOT" SAND OF ZONE 2 IN POINTE COUPEE PARISH, LOUISIANA.

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STRUCTURE CONTOUR
SHOWS ALTITUDE OF BASE OF "1700-FOOT" SAND. DASHED WHERE APPROXIMATE. CONTOUR INTERVAL 100 FEET. DATUM IS MEAN SEA LEVEL

100

LINE OF EQUAL THICKNESS. INTERVAL 100 FEET

AREA WHERE SALT WATER IS IN THE AQUIFER, OR IN UNDERLYING SANDS THAT ARE IN CLOSE HYDRAULIC CONNECTION

AREA WHERE AQUIFER IS THIN, MISSING, OR INDISTINGUISHABLE FROM OVERLYING OR UNDERLYING SAND UNITS

SEE PLATE 2 FOR GEOLOGIC SECTIONS A-A', B-B', AND C-C'

PLATE 7. THICKNESS AND ALTITUDE OF THE BASE OF THE "1,700-FOOT" SAND OF ZONE 2 IN POINTE COUPEE PARISH, LOUISIANA.

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STRUCTURE CONTOUR
SHOWS ALTITUDE OF BASE OF "2000-FOOT" SAND. DASHED WHERE APPROXIMATE. CONTOUR INTERVAL 100 FEET. DATUM IS MEAN SEA LEVEL

100

LINE OF EQUAL THICKNESS. INTERVAL 50 FEET

AREA WHERE SALT WATER IS IN THE AQUIFER, OR IN UNDERLYING SANDS THAT ARE IN CLOSE HYDRAULIC CONNECTION

AREA WHERE AQUIFER IS THIN, MISSING, OR IS INDISTINGUISHABLE FROM OVERLYING OR UNDERLYING SAND UNITS

SEE PLATE 2 FOR GEOLOGIC SECTIONS A-A', B-B', AND C-C'

PLATE 8. THICKNESS AND ALTITUDE OF THE BASE OF THE "2,000-FOOT" SAND OF ZONE 2 IN POINTE COUPEE PARISH, LOUISIANA.

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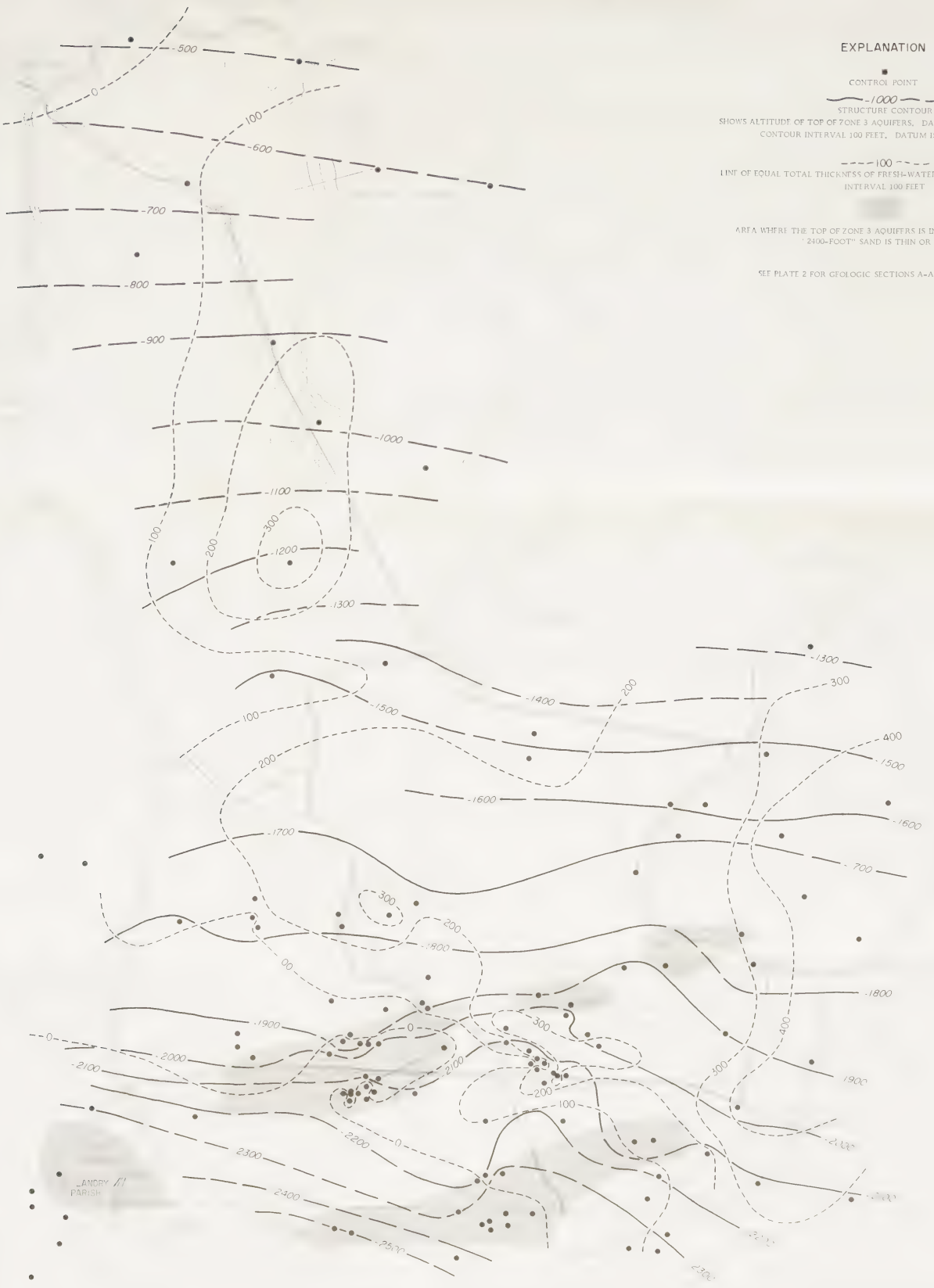

PLATE 9. TOTAL THICKNESS OF FRESH-WATER-BEARING SAND IN ZONE 3 AQUIFERS AND THE ALTITUDE OF THE TOP OF THIS ZONE ("2,400-FOOT" SAND) IN POINTE COUPEE PARISH, LOUISIANA.

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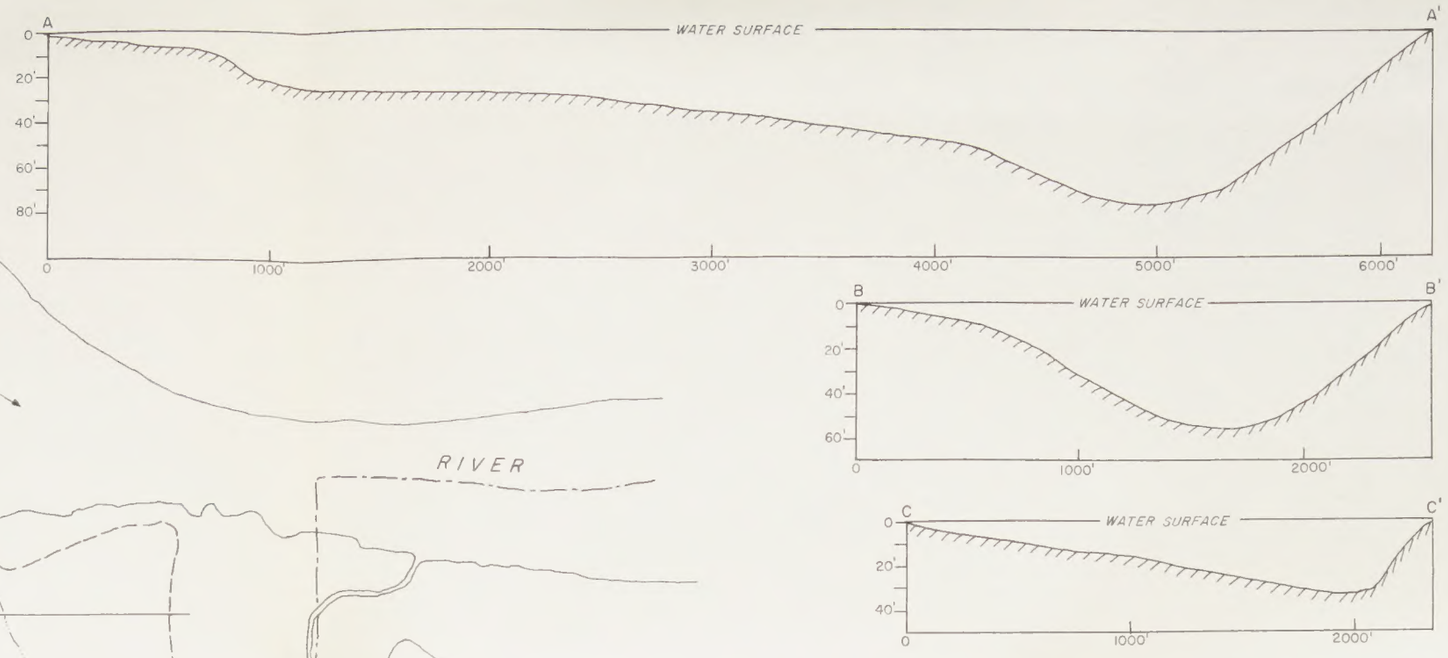


RACCOURCI OLD RIVER PROFILES A-A', B-B', AND C-C'

EXPLANATION

10

CONTOUR SHOWING DEPTH OF LAKE BELOW WATER SURFACE. INTERVAL 10 FEET

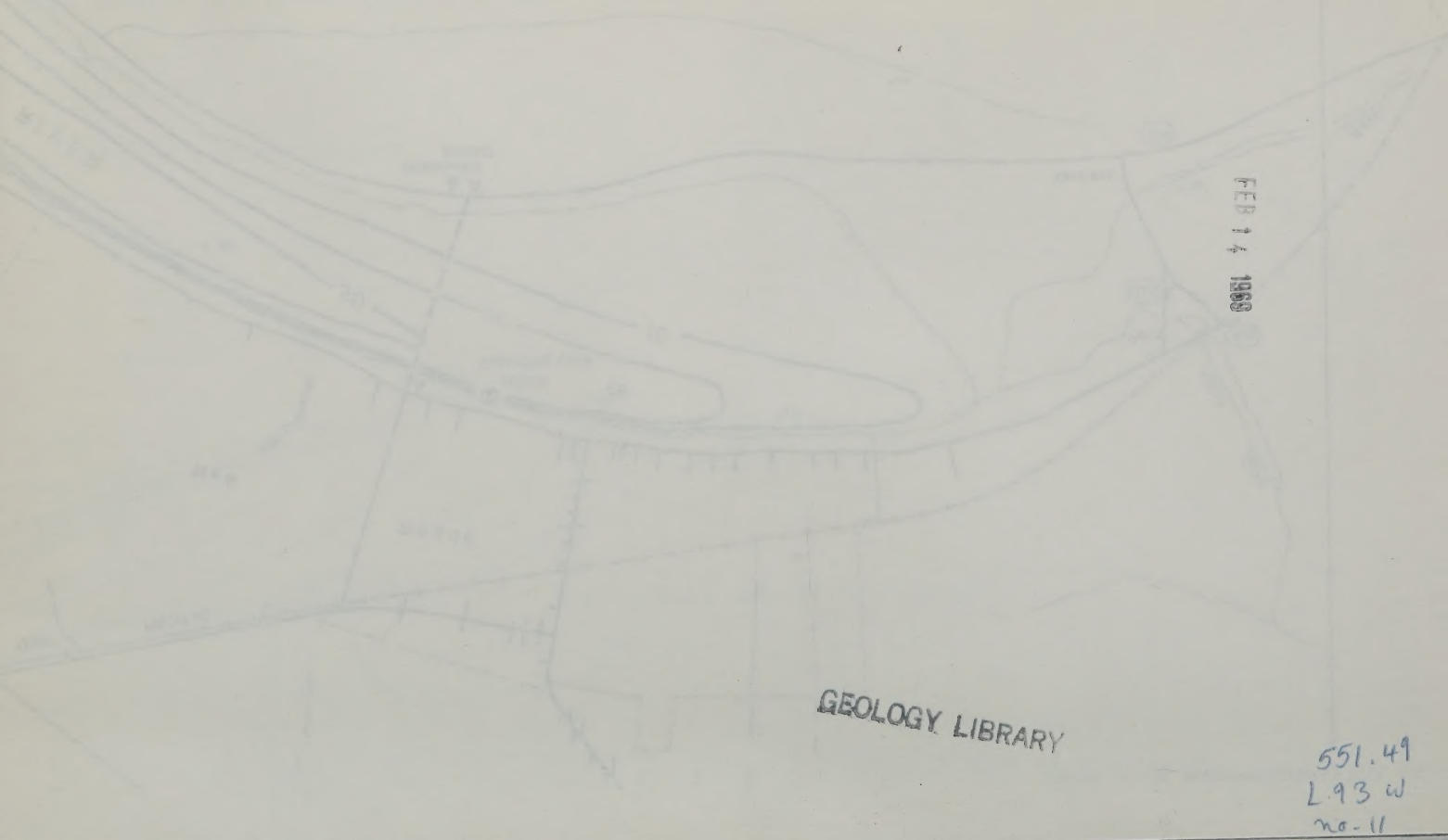
x 27

DEPTH OF LAKE IN FEET BELOW WATER SURFACE

DEPTHS ARE MEASURED FROM A WATER-SURFACE ALTITUDE OF ABOUT 20 FEET. CONTOURS TAKEN FROM CROSS SECTIONS MADE FROM USCE FATHOMETER SURVEY, AUG. 1963 (U. S. ARMY CORPS OF ENGINEERS, 1965, SHEETS 10-13)

BASE FROM U. S. GEOLOGICAL SURVEY TOPOGRAPHIC QUADRANGLES

PLATE 10. DEPTH OF AND PROFILES ACROSS RACCOURCI OLD RIVER IN POINTE COUPEE AND WEST FELICIANA PARISHES, LOUISIANA.



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EXPLANATION

—10— CONTOUR SHOWING DEPTH OF LAKE BELOW WATER SURFACE. INTERVAL 10 FEET

x36 DEPTH OF LAKE IN FEET BELOW WATER SURFACE

DEPTHS ARE MEASURED FROM A WATER-SURFACE ALTITUDE OF ABOUT 15 FEET. CONTOURS TAKEN FROM CROSS SECTIONS MADE FROM USGS FATHOMETER SURVEY, AUG. 1963

BASE FROM U. S. GEOLOGICAL SURVEY TOPOGRAPHIC QUADRANGLES

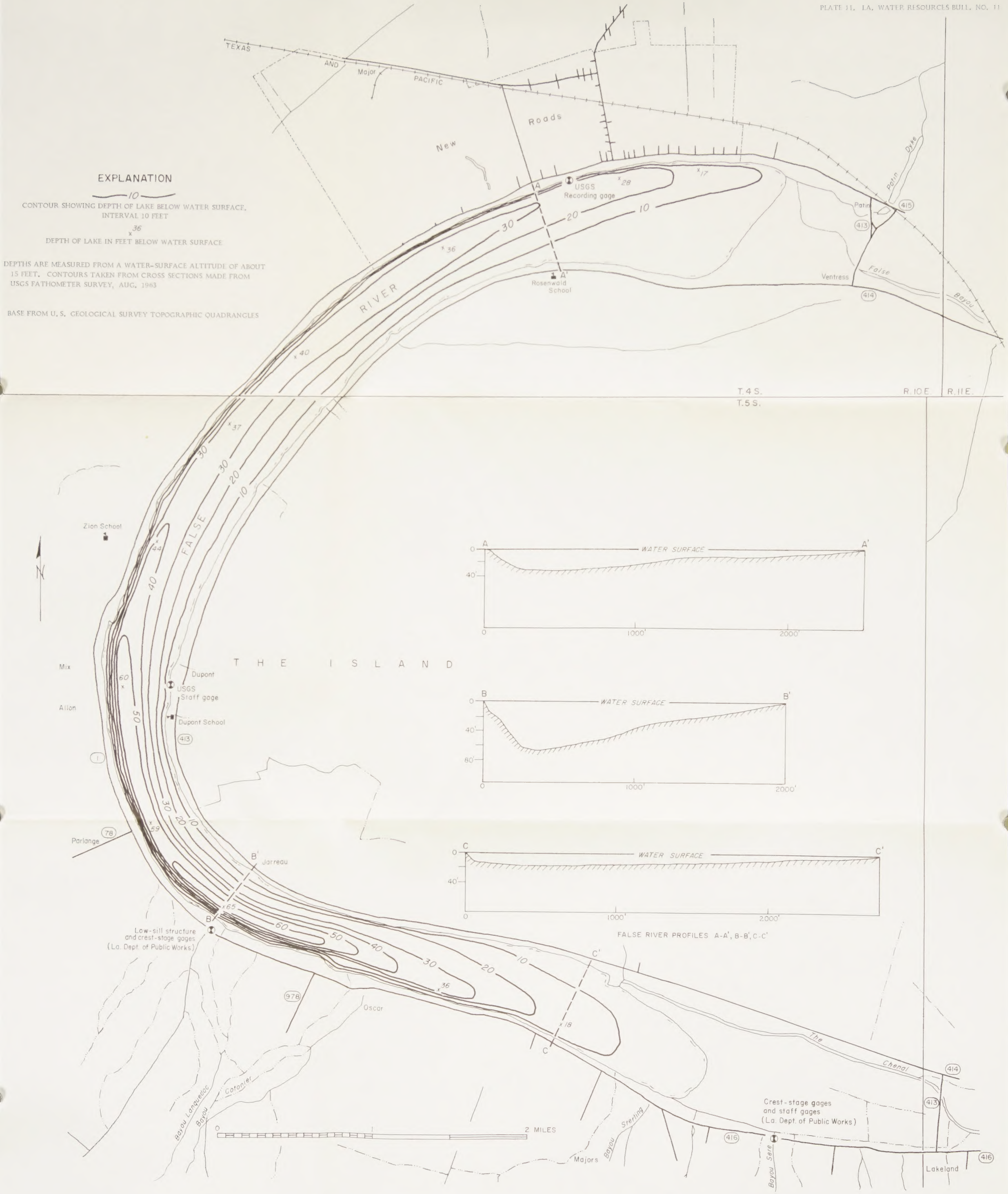

PLATE 11. DEPTH OF AND PROFILES ACROSS FALSE RIVER IN POINTE COUPEE PARISH, LOUISIANA.